

UNCLASSIFIED

AD NUMBER

AD808540

LIMITATION CHANGES

TO:

Approved for public release; distribution is unlimited.

FROM:

**Distribution authorized to U.S. Gov't. agencies and their contractors;
Administrative/Operational Use; JAN 1967. Other requests shall be referred to Army Engineer Waterways Experiment Station, Vicksburg, MS.**

AUTHORITY

AEWES ltr 27 Jul 1971

THIS PAGE IS UNCLASSIFIED

608540

TECHNICAL REPORT NO. 3-753

TRAFFICABILITY CLASSIFICATION OF THAILAND SOILS

M. P. Meyer



January 1967

Sponsored by

Advanced Research Projects Agency
Directorate of Remote Area Conflict
Control Agency

U. S. Army Material Command

Contracted by

U. S. Army Engineer Waterways Experiment Station
COAST OF ENGLAND

FOR SALE BY
WATERWAYS EXPERIMENT STATION

~~Destroy this report when no longer needed. Do not return
it to the organization.~~

~~REDACTED~~

TECHNICAL REPORT NO. 3-753

TRAFFICABILITY CLASSIFICATION OF THAILAND SOILS

by

M. P. Meyer



January 1967

Sponsored by

Advanced Research Projects Agency
Directorate of Remote Area Conflict
Order No. 400

Service Agency

U. S. Army Materiel Command
Project No. I-V-0-21701-A-046
Task 02

Conducted by

U. S. Army Engineer Waterways Experiment Station
CORPS OF ENGINEERS
Vicksburg, Mississippi

ARMY-NRC VICKSBURG, MISS.

This document is subject to special export controls and each transmittal to foreign governments or foreign nationals may be made only with prior approval of U. S. Army Engineer Waterways Experiment Station.

PAGES NOT FILMED ARE BLANK.

FOREWORD

The study reported herein constitutes a portion of the Mobility Environmental Research Study (MERS), sponsored by the Office, Secretary of Defense, Advanced Research Projects Agency (ARPA), Directorate of Remote Area Conflict, for which the U. S. Army Engineer Waterways Experiment Station (WES) is the prime contractor, and the U. S. Army Materiel Command (AMC) is the service agent. The broad mission of Project MERS is to determine the effects of the various features of physical environment on the performance of cross-country, ground-contact vehicles and to provide therefrom data which can be used to improve both the design and employment of such vehicles. One criterion of the project is that the data be interpretable in terms of vehicle requirements for Southeast Asia. Most of the funds employed for this study were allocated to WES through AMC under ARPA Order No. 400. The remaining funds were provided by the Directorate of Research and Development, AMC, as part of Department of the Army Project No. 1-V-0-21701-A-046, "Trafficability and Mobility Research," Task 1-V-0-21701-A-046-02, "Surface Mobility."

The study was performed by personnel of WES during the period August 1964-May 1966. The study was assigned to the Army Mobility Research Branch (AMRB), Mobility and Environmental (M&E) Division. Mr. M. P. Meyer had the primary responsibility for the general conduct of the study including the preparation of this report. Mr. J. G. Kennedy programmed the data for computer analysis. Mr. G. T. Ellis compiled the data and assisted in the analysis. Mr. C. A. Blackmon wrote the appendix. Others assisting in the study include Messrs. S. M. Hodge, J. E. Lee, and H. D. Molthan. All phases of the study were under the direct supervision of Mr. E. S. Rush, Chief of the Trafficability Section, AMRB, and the general supervision of

Dr. D. R. Freitag, Chief, AMRB; Mr. A. A. Rula, Chief, MERS Branch; Messrs. W. G. Shockley and S. J. Knight, Chief and Assistant Chief, respectively, M&E Division; and Mr. W. J. Turnbull, Technical Assistant for Soils and Environmental Engineering.

Directors of the WES during the conduct of this study and the preparation of this report were Col. Alex G. Sutton, Jr., CE, and Col. John R. Oswalt, Jr., CE. Technical Director was Mr. J. B. Tiffany.

CONTENTS

	<u>Page</u>
FOREWORD	iii
SUMMARY.	vii
PART I: INTRODUCTION.	1
Background	1
Purpose.	1
Scope.	1
General Approach	2
PART II: TRAFFICABILITY FACTORS	5
Soil Bearing and Traction Capacities	6
Methods of Measuring and Evaluating Soil Trafficability.	6
Soil Moisture.	9
Slope.	14
PART III: ANALYSIS OF DATA.	16
Basic Data	16
Method of Computation.	18
Mean and Standard Deviation Values of Soil Properties.	18
Cumulative Frequency Analysis of Rating Cone Index	23
PART IV: SOIL TRAFFICABILITY CLASSIFICATION SCHEME AND RELATED STUDIES	26
Vehicle Categories	26
Soil Trafficability Classification Scheme, Level Terrain	27
Probability of Vehicle "Go" on Level and Sloping Terrain	29
Application of Information for Estimating Trafficability Conditions	31
Estimation of Percentage of Area Trafficable	34
PART V: CONCLUSIONS AND RECOMMENDATIONS	36
Conclusions.	36
Recommendations.	38

CONTENTS

	<u>Page</u>
LITERATURE CITED	39
TABLES 1-11	
PLATES 1-10	
APPENDIX A: SOURCES OF DATA AND DETAILED PROCEDURES USED TO OBTAIN DATA	A1
Preliminary Survey Study	A2
Trafficability Classification Study	A3
Surface Composition Study	A6
Soil Moisture-Strength Study	A7
U. S. Army Cold Regions Research and Engineering Laboratory (CRREL) Airphoto Pattern Study	A10
Terrain-Vehicle Tests	A11

TABLES A1-A6

SUMMARY

The study reported herein consisted of a statistical analysis of the principal factors that influence soil trafficability and the application of the analysis to the development of a scheme for classifying soils under generally wet conditions in Thailand. The scheme is essentially a listing of soil types (in terms of the Unified Soil Classification System and the U. S. Department of Agriculture textural classification system) in decreasing order of median rating cone index. Means and ranges are given for each soil type in high- and low-topography positions for average and highest soil-moisture conditions during the wet season. The probability of successful negotiation of a soil type by military vehicles can be ascertained by comparing vehicle cone indexes with the frequency distribution of rating cone indexes for the soils. Results of the studies performed in the development of the trafficability scheme are summarized as follows:

- a. The probability of "go" for a given vehicle over a given soil type is higher on high topographic positions than on low topographic positions; on low topographic positions the probability of "go" is lowest during times of maximum soil-moisture conditions. For a given topography-moisture condition the probability of "go" decreases for USCS soils in the following order: clean, coarse-grained soils, coarse-grained soils with fines, fine-grained soils, and organic soils.
- b. Soils in Thailand have slightly higher strengths under wettest soil-moisture conditions and slightly lower strengths under average soil-moisture conditions during the wet season than do soils in humid-temperate areas of the United States.

TRAFFICABILITY CLASSIFICATION OF THAILAND SOILS

PART I: INTRODUCTION

Background

1. The study reported herein is a part of an extensive investigation conducted to develop techniques and procedures for determining off-road soil conditions in Thailand and a graphic means of presenting these conditions which will show the relations between vehicle mobility, soil type and moisture content, and slope. This study consisted of a statistical analysis of the principal factors that influence soil trafficability and the application of the analysis in developing a scheme for classifying Thailand soils under generally wet conditions. The scheme presented herein is essentially the same as that reported in a previous WES publication.¹ The major differences are that this scheme is applied to a more restricted area, and some refinement of analytical procedures has been made.

Purpose

2. The purpose of this study was to develop a scheme for classifying the trafficability of Thailand soils in the wet season based on identification of the soils in terms of the Unified Soil Classification System (USCS) and the U. S. Department of Agriculture (USDA) textural classification system, general topographic data, and two general levels of soil-moisture content.

Scope

3. Trafficability data collected at 846 sites in Thailand on coarse-grained soils with fines and fine-grained soils of the 0- to 6- and 6- to 12-in. soil layers were statistically analyzed in the development of a trafficability classification scheme. In 1964 data from 238 sites were collected specifically for this study. Other data used were collected in various Mobility Environmental Research Study (MERS) programs including:

a preliminary survey of environmental factors affecting ground mobility in Thailand,² performed in 1962; the study of a quantitative method for describing terrain for ground mobility, surface composition,³ performed in 1964-1965; a study of soil moisture-strength characteristics of selected soils in Thailand,⁴ performed in 1963-1965; a study of selected airphoto patterns of terrain features,⁵ performed in 1964-1965 by the U. S. Army Cold Regions Research and Engineering Laboratory (CRREL); and tests to develop an analytical model for predicting cross-country vehicle performance,⁶ performed in 1965. Most of these data came from the Chiang Mai, Nakhon Sawan, Khon Kaen, Lop Buri, Chanthaburi, and Pran Buri study areas. Analyses were made of cone index, remolding index, rating cone index, surface shear strength, moisture content, density, and specific gravity of soils of low and high topography identified according to the USCS and the USDA textural classification system.

General Approach

4. A soil trafficability classification scheme, if it is to be practicable, must first name or identify the soils according to some recognized system of soil classification, then establish trafficability limits for each soil type, and finally, if feasible, collect the various soil types into a small number of groups, each exhibiting a discrete trafficability behavior. The ideal scheme would be one that provides for consideration and evaluation of all aspects of the environment (pedologic, geologic, hydrologic, physiographic, climatic, and vegetative) that affect the trafficability of the soil. The scheme reported herein considers the soil type under very general space and time conditions in a tropical climate. Further refinement according to the environmental characteristics mentioned previously must await the collection of additional data and further analysis.

5. Because their trafficability behavior is not materially affected by moisture content, clean sands and gravel have been given a distinct place in the soil trafficability classification scheme and have been excluded from the various statistical analyses that are presented in this report.

6. The soil trafficability classification scheme presented in this report may be considered a composite classification scheme because it uses two well-known systems of soil identification and is based on two moisture levels. The two soil classification systems used are the USCS⁷ (fig. 1) and the USDA soil textural classification system⁸ (fig. 2). The USCS employs soil texture, plasticity, and organic content to name or type soils, whereas the USDA system is based solely on grain size distribution. Because the USCS characterizes soils on the basis of their engineering behavior, it is considered to be more applicable to the development of a soil trafficability classification scheme than the USDA system. However, since many areas in Thailand and other areas in Southeast Asia are mapped in USDA terms, it was also considered desirable to develop a scheme in USDA terms.

**UNIFIED SOIL CLASSIFICATION
(including Identification and Description)**

Major Division	Group Symbol	Typical Name	Information Required for Identification			Laboratory Classification Criteria
			Field Identification Procedure (Indicating particle larger than 3 in. and having fractions on estimated weight)	Information Required for Describing Soils	6	
1	2	3				
2	3	4				
3	4	Well-sorted gravel, gravel-and-silts, little or no fine.	Wide range in grain size and substantial amounts of all intermediate particle sizes.			
4P	5	Poorly graded gravel or gravel-and-silts mixture, little or no fine.	Predominantly one size or a range of sizes with some intermediate sizes混入。			
4S	6	Silty gravel, gravel-and-silt mixture.	Plastic fine or fine with low plasticity. (For identification procedures see No. below).			
5G	6	Clayey gravel, gravel-and-clay mixture.	Plastic fine (for identification procedures see No. below).			
5W	7	Well-sorted sand, gravelly sand, little or no fine.	Wide range in grain size and substantial amounts of all intermediate particle sizes.			
5P	8	Poorly graded sand or gravelly sand, little or no fine.	Predominantly one size or a range of sizes with some intermediate sizes混入。			
5F	9	Silty sand, sand-silt mixture.	Plastic fine or fine with low plasticity. (For identification procedures see No. below).			
5C	10	Clayey sand, sand-clay mixture.	Plastic fine (for identification procedures see No. below).			
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						
45						
46						
47						
48						
49						
50						
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						
61						
62						
63						
64						
65						
66						
67						
68						
69						
70						
71						
72						
73						
74						
75						
76						
77						
78						
79						
80						
81						
82						
83						
84						
85						
86						
87						
88						
89						
90						
91						
92						
93						
94						
95						
96						
97						
98						
99						
100						
101						
102						
103						
104						
105						
106						
107						
108						
109						
110						
111						
112						
113						
114						
115						
116						
117						
118						
119						
120						
121						
122						
123						
124						
125						
126						
127						
128						
129						
130						
131						
132						
133						
134						
135						
136						
137						
138						
139						
140						
141						
142						
143						
144						
145						
146						
147						
148						
149						
150						
151						
152						
153						
154						
155						
156						
157						
158						
159						
160						
161						
162						
163						
164						
165						
166						
167						
168						
169						
170						
171						
172						
173						
174						
175						
176						
177						
178						
179						
180						
181						
182						
183						
184						
185						
186						
187						
188						
189						
190						
191						
192						
193						
194						
195						
196						
197						
198						
199						
200						
201						
202						
203						
204						
205						
206						
207						
208						
209						
210						
211						
212						
213						
214						
215						
216						
217						
218						
219						
220						
221						
222						
223						
224						
225						
226						
227						
228						
229						
230						
231						
232						
233						
234						
235						
236						
237						
238						
239						
240						
241						
242						
243						
244						
245						
246						
247						
248						
249						
250						
251						
252						
253						
254						
255						
256						
257						
258						
259						
260						
261						
262						
263						
264						
265						
266						
267						
268						
269						
270						
271						
272						
273						
274						
275						
276						
277						
278						
279						
280						
281						
282						
283						
284						
285						
286						
287						
288						
289						
290						
291						
292						
293						
294						
295						
296						
297						
298						
299						
300						
301						
302						
303						
304						
305						
306						
307						
308						
309						
310						
311						
312						
313						
314						
315						
316						
317						
318						
319						

Fig. 1. Unified Soil Classification System

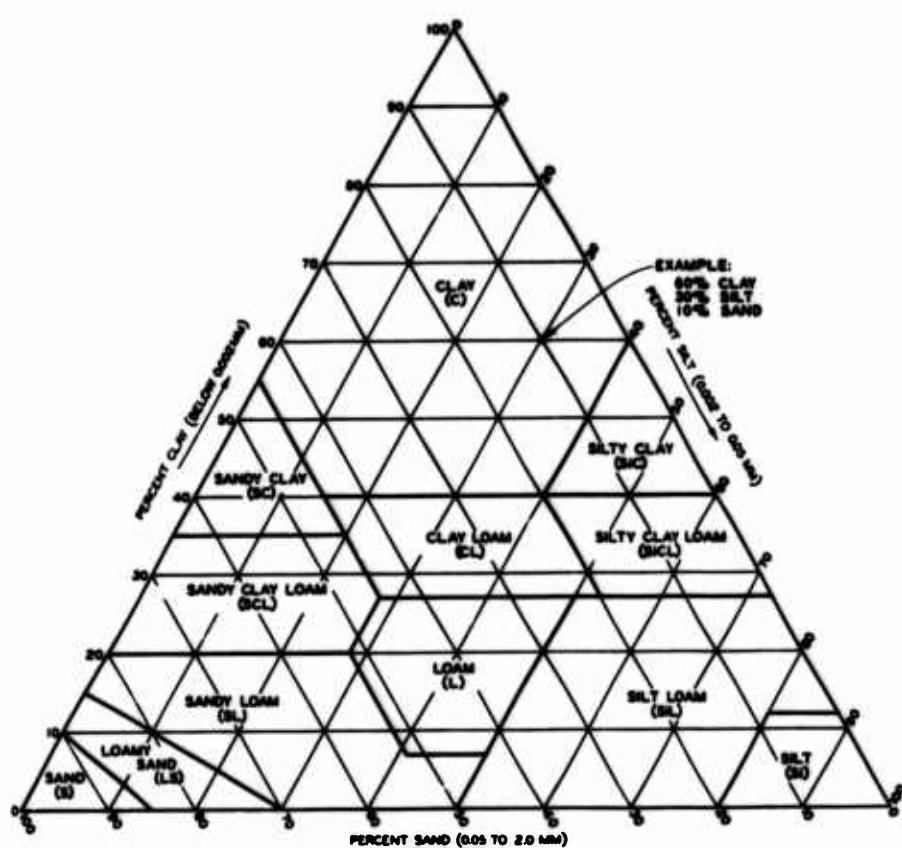


Fig. 2. USDA soil textural classification system

PART II: TRAFFICABILITY FACTORS

7. Trafficability is defined as the capacity of a soil to withstand traffic by vehicles. It is an important aspect of cross-country movement which may be defined as the ability of terrain to permit the movement of vehicles. The factors that influence cross-country movement are numerous. They include not only the many variables which combine to determine the strength and other physical properties of soils, but also slope and other natural obstacles such as drainageways, scarpes, vegetation, and microrelief features, as well as man-made obstacles such as railroad embankments, canals, paddy dikes, etc. The investigation reported herein deals mainly with the trafficability of soils. However, the effects of slope are also considered.

Soil Bearing and Traction Capacities

8. Bearing and traction capacities are primarily functions of strength (or shearing resistance) of a soil. Bearing capacity is the ability of a soil to support a vehicle without undue sinkage; traction capacity is the ability of a soil to provide sufficient resistance between the propulsion element of a vehicle and the soil for the necessary thrust to move the vehicle forward. The trafficability of a soil is considered adequate for a given vehicle if the soil has sufficient bearing capacity to support the vehicle and sufficient traction capacity to enable the vehicle to develop the forward thrust necessary to overcome its rolling resistance.

Methods of Measuring and Evaluating Soil Trafficability

9. The soil strength measurements used in the WES system for predicting vehicle performance were used in developing the soil trafficability classification scheme discussed in this report. It has been demonstrated that the effect of soil on the performance of vehicles in terms of "go"*

* In this report "go" means that 50 vehicles can pass in straight-line traffic or one vehicle can execute severe maneuvers without becoming immobilized.

and "no go," slope-climbing ability, drawbar pull, and force required to tow the vehicle can be predicted with reasonable accuracy if the mass and surface soil strengths are not vastly different. If the mass soil strength is high and the surface is wet or consists of a thin, soft soil layer, the vehicle will sink very little, but forward motion may be denied because of loss of traction. Present methods for predicting the performance of vehicles on such soils are not entirely satisfactory. Previous investigations have also shown that the change in strength of a soil which will be developed under vehicular traffic differs significantly for fine-grained and coarse-grained soils; therefore, the measurement and evaluation methods differ somewhat. These differences are discussed in the following paragraphs.

Soil strength measurements used
for determining trafficability

10. Fine-grained soils and sands with fines, poorly drained. In fine-grained soils and in sands with fines, poorly drained, cone index (CI) and remolding index (RI) measurements are necessary to define soil trafficability. The CI provides an index of the *in-situ* or undisturbed shear strength of the soil prior to vehicular traffic. It, by itself, is inadequate for predicting the soil strength after repeated traffic by a vehicle because repetitive traffic invariably remolds the soil, thus altering its strength. The probable effect of vehicular traffic on soil strength is obtained from the RI, which indicates the direction and magnitude of the strength change that can be anticipated under vehicular traffic. An RI less than 1.00 denotes a strength loss as a result of remolding; an RI greater than 1.00 indicates a gain in strength. For example, a wet silt may retain only 25% of its undisturbed strength once it is subjected to repetitive vehicular traffic.

11. The trafficability of fine-grained soils and sands with fines, poorly drained, is therefore defined in terms of a value called the rating cone index (RCI), which is the product of the CI and the RI for the same soil layer. In general, the soil layer between the 6- and 12-in. depths is critical for most military vehicles operating in such soils. However, the depth of the critical layer varies with the strength profile of the soil and the vehicle type and weight.^{9,10}

12. Various instruments are currently being tested to determine their utility for predicting surface traction for soil trafficability purposes. One instrument (shearograph) used in this study provides a measure of the ultimate cohesion and ultimate angle of internal friction for soil-to-soil and rubber-to-soil shear failures. In this study a normal load of 10 psi was arbitrarily selected as a constant in determining the surface shear strength of a soil. The equipment and procedures used in taking shearograph measurements and in reducing and evaluating the data are described in references 11 and 12.

13. Coarse-grained soils. For coarse-grained soils or clean sands, CI measurements alone are adequate to quantify trafficability. Usually, the strength of clean sands is not altered significantly by changes in moisture content. Clean sands possess adequate strength to support vehicles without critical sinkage. In clean sands the first pass is the most critical, and subsequent passes are made with less difficulty. The 0- to 6-in. layer is considered the critical layer for most military vehicles.

Evaluation of soil trafficability

14. Fine-grained soils and sands with fines, poorly drained. The ability of a given vehicle to complete 40 to 50 passes traveling in a straight-line path over a level area or to execute severe maneuvers in fine-grained soils or sands with fines, poorly drained, is assured if the RCI of the soil in the critical layer in that area is equal to or greater than the vehicle cone index (VCI) assigned to that vehicle. In general, an RCI equal to 50% of the VCI indicates sufficient soil strength to permit one or two straight-line passes of the vehicle.¹³ If the RCI is greater than the VCI of a given vehicle, the additional traction resulting from the excess soil strength can be used to accelerate the vehicle, negotiate slopes, or tow a load.

15. The VCI's for most military vehicles are tabulated in several publications.^{9,10} The referenced publications also contain formulas for computing mobility indexes, means of relating these indexes to VCI's, and the relation of drawbar pull, slope, and force required to tow the vehicle to soil strength.

16. Coarse-grained soils. Studies being conducted on clean sands

have not yet progressed to the point of quantifying trafficability. Results thus far indicate that tracked vehicles usually experience little or no difficulty traversing level, clean-sand areas. The effect of soil strength on vehicle performance (in terms of drawbar pull and slope-climbing ability) of a given tracked vehicle is small; however, a significant difference in performance exists among vehicles having different types of track systems. A wide range in wheeled-vehicle performance occurs as a result of changes in tire pressure, number of tires, and tire size.

Soil Moisture

17. The principal factor influencing the strength of a given soil is its moisture content. Any soil in a comparatively dry state may be trafficable to all military vehicles; but at high moisture content, its strength and consequently its trafficability may be such that only certain vehicles can pass. It is apparent that moisture conditions must be taken into account in any evaluation of the trafficability of soils and, further, that soils must be at similar or equivalent conditions of moisture in order that they can be rated fairly in comparison with each other.

18. Moisture is added to the soil through precipitation, a rising water table, flooding, or irrigation. Moisture is generally depleted from the soil by runoff, gravitational percolation, evaporation, or transpiration through plants. The rate and magnitude of moisture gain or loss and the capacity of the soil to hold water are controlled primarily by the soil and by site characteristics that determine the porosity and permeability of the soil. These characteristics, for the most part, are influenced by the plastic, organic, and textural properties of the soil that are defined in terms of the USCS and the USDA soil classification system.

Climate and season

19. Climate must be considered in any type of soil-moisture analysis. The principal elements of climate consist of precipitation, temperature, atmospheric humidity and pressure, and wind velocity. Of these, precipitation and temperature are the two most important factors controlling the gain and loss of soil moisture. Similar soils within a specific climatic

area will have qualitatively similar seasonal soil-moisture conditions; and conversely, similar soils of different climates will have dissimilar seasonal soil-moisture regimes. Soils in hot, humid climatic areas, for example, generally approach minimum moisture levels more rapidly than soils in cool, humid climatic areas because of higher rates of evapotranspiration.

20. For purposes of this study, a wet season and a dry season are considered, based on the qualitative moisture conditions of the soil. The wet season is defined as the period of the year when generally high soil-moisture contents prevail; it corresponds to the period of maximum precipitation. The dry season is defined as the period of generally low soil-moisture contents, although maximum moisture contents may occur for short periods immediately after several days of heavy rain.

21. Soil-moisture studies conducted at specific sites in various sections of Thailand for continuous periods of almost two years have been used to refine a system for predicting the effects of meteorological factors on the trafficability of soils. The studies show, among other things, that the top 12 in. or so of soil attain relatively high moisture contents during the monsoon season beginning in May or June and continuing through October or November. The distribution of high-rainfall months wherein the rainfall exceeds 100 mm (3.94 in.) a month is recorded in the following tabulation for nine weather stations in Thailand that are located in areas that include most of the study sites.

Location of Weather Station	Years of Record	Percent of Years of Record with Rainfall Exceeding 100 mm (3.94 in.) per Month											
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Chiang Mai	19-1/2	0	0	0	20	80	75	89	100	100	63	11	0
Khon Kaen	17	0	0	12	35	100	76	76	100	100	35	0	0
Nakhon Sawan	15	0	7	0	13	53	53	67	93	100	73	0	0
Lop Buri	17-1/2	0	0	24	29	71	82	94	89	100	61	6	0
Bangkok	23-2/3	0	4	4	35	87	87	79	92	100	96	17	0
Chanthaburi	23	4	9	26	70	100	100	100	100	100	96	26	0
Sattahip (Chanthaburi Area)	23	0	17	17	48	74	26	30	35	87	96	52	4
Hua Hin (Pran Buri Area)	20-1/3	5	0	0	15	55	40	25	40	67	81	43	0
Songkhla (Hat Yai Area)	22-2/3	61	17	22	43	57	57	45	33	55	96	100	91

Space and time factors
affecting soil-moisture content

22. In order to estimate the trafficability of a site more accurately, consideration must be given not only to its soil type but also to its topographic position and its general relative moisture-content level. From a study of the data available, certain arbitrary "space" and "time" factors have been designated that are considered essential for optimum accuracy in estimating trafficability on the basis of existing knowledge and available data. Additional data and further study may produce more explicit criteria for estimating the trafficability at a site. However, at the present time, two space factors (low and high topography) and two time factors (wet-season and high-moisture conditions) will be used. These are illustrated in fig. 3 and explained in the following paragraphs.

23. Space factors. The depth to the water table has been found to be a significant factor in determining how wet a site may become. Sites which have a water table within 4 ft of the surface become wetter in the top foot than do sites with the water table below the top 4 ft, even though all other conditions appear to be the same.

a. Low topography. A site of low topography is one at which a water table is known to exist within 4 ft of the surface, perennially or at some time during the year. Such sites usually occur as bottomlands, lower terraces, depressions, or bottoms of slopes, or occasionally as upland flats associated with impervious subsurface layers or pans. They are generally characterized by poor to fair external drainage and moderately poor to very poor internal drainage. If the water table is actually observed at depths of less than 4 ft from the surface at a site at least once, the site automatically qualifies as a low-topography site. If observed data on water-table depth are not available, sites which appear, from observation, likely to have high water tables on the basis of their topographic position, drainage characteristics, proximity to surface water bodies, or soil coloring (gray or blue mottled soils usually indicate the presence of a consistent water table) are judged to be low-topography sites.

b. High topography. Sites of high topography have water tables at depths greater than 4 ft from the surface at all times. These sites are characterized by soils with no impervious layers or pans and with moderate to good internal and external drainage. They are usually located on ridges or upper

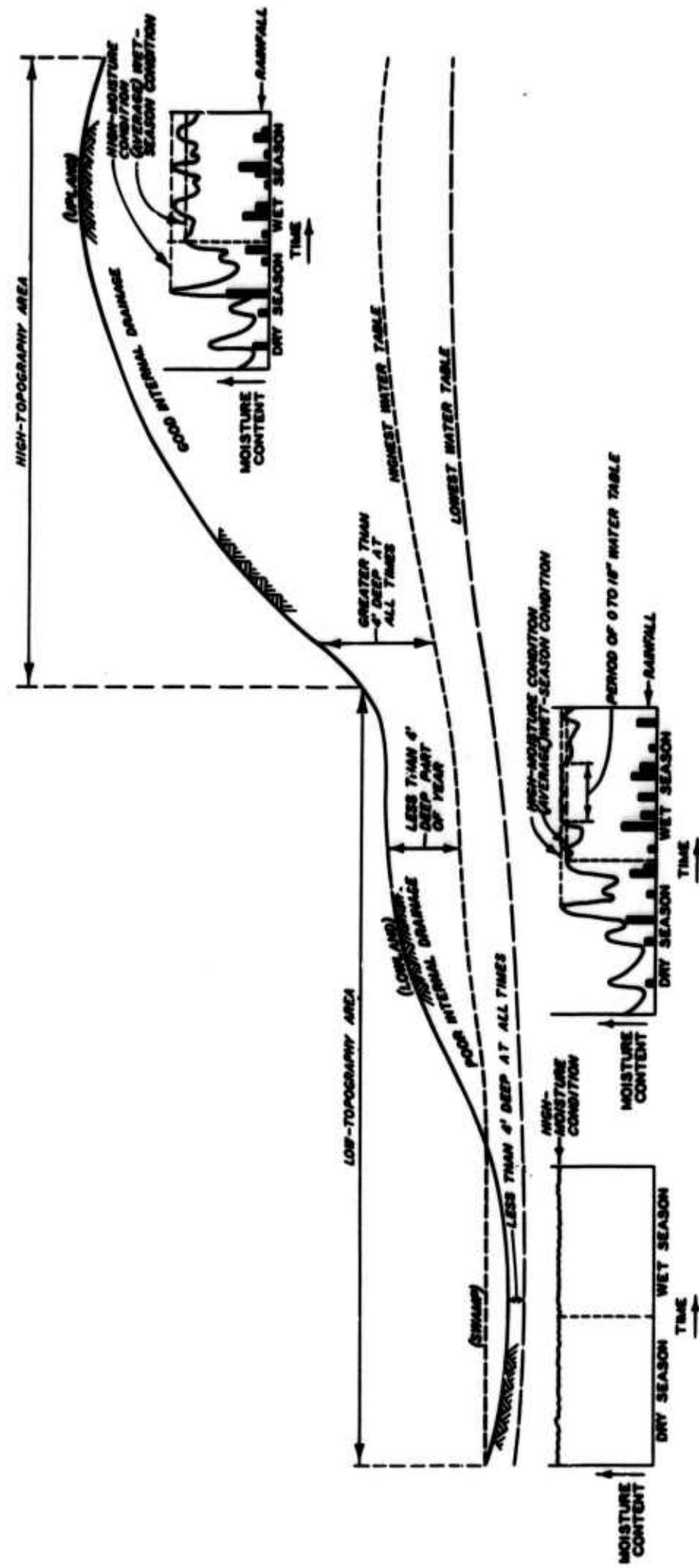


Fig. 3. Profile of a typical area showing various topography-moisture conditions during year

slopes. If information on the water table is not available, it is usually possible to determine whether a site is one of high topography through a study of the topographic position and other environmental data available.

24. Time factors. While for this study it would have been desirable to have examined the means and ranges of pertinent soil values measured at a time when the moisture content was at rigorous reference levels, such as field maximum or field capacity, this was not feasible because only a few sites (the prediction-development sites) were known to have been tested when the moisture content was at these levels. In order to realize the benefit of values derived from large masses of data, less rigorous moisture levels, wet-season and high-moisture conditions, were selected. These conditions, or time factors as they are called in this report, are discussed in the following subparagraphs.

- a. Wet-season condition. The wet-season condition is intended to represent the average moisture condition prevailing in soils during the wet season. Data from some of the drier sites were not utilized because the soil was too firm to obtain the necessary data for a determination of rating cone index. Exclusion of these data tended to bias the averages toward wetter-than-average conditions.
- b. High-moisture condition. The high-moisture condition represents the worst trafficability condition that can occur at sites that undergo seasonal changes. Marshes, bogs, swamps, and other perennially wet, soft, spongy areas are prime examples of low-topography areas under a high-moisture condition at all times. Low-lying areas with fluctuating water tables and upland areas with seasonal perched water tables are typical examples of low-topography areas where a high-moisture condition occurs intermittently. Low- and high-topography areas that have been subjected to moderate or heavy rainfall are normally under a high-moisture condition during and immediately following rain periods. In this study a high-moisture condition at high-topography sites could not be identified from the collected data. Consequently, an analysis was not made for this topography-moisture condition and the classification scheme does not include data for this category. Only one set of high-moisture data (cone index, remolding index, rating cone index, sheargraph, and moisture content) was used in the analysis for a given low-topography site. At sites where high-moisture data were collected on more than one day, the set of data selected was for the day of lowest rating cone index. The moisture content for this day was usually, but not

necessarily, the highest recorded at the site. In analyzing the data, a high-moisture condition was considered to have been prevalent at a low-topography site when it was known that the water table was within the top 18 in. of soil. (This 18-in. criterion is based on studies in the United States¹⁴ that show that the strength of a soil decreases at a logarithmic rate with a decrease in depth to the water table and a relatively small rate of change of strength per unit change in depth to the water table when the water table is above a depth of 18 in.)

Slope

25. Vehicles that can traverse certain soils on level surfaces often become immobilized when climbing slopes on similar soils. These immobilizations can be attributed primarily to a downhill force, a function of the vehicle's weight and the angle of slope, which opposes the vehicle's forward thrust. In this report slope is expressed in terms of percent (vertical rise divided by horizontal distance, multiplied by 100).

Slope index

26. The adverse effect of slope on vehicle performance can be expressed by an increase in rating cone index requirements above the vehicle's requirements for level terrain. These excess RCI points, called slope index, may be added to the vehicle cone index and the determination of "go" or "no go" is made by comparing this value with the measured RCI. Detailed procedures are available for determining slope effects and for estimating the maximum slopes negotiable by various vehicle types.^{9,10} Three slope index values, one for tracked vehicles with grousers longer than 1-1/2 in., another for tracked vehicles with grousers shorter than 1-1/2 in., and the third for wheeled vehicles, can be obtained for a given slope from the three respective curves shown in plate 1. If, for example, the slope is 30%, the slope indexes for the three vehicle classes would be 13, 15, and 20, respectively.

Effective rating cone index (ERCI)

27. The ERCI is a combined soil strength-slope value which rates the trafficability of a sloping soil. The index is computed by subtracting the slope index from the rating cone index. For example, if the RCI of a soil

is determined to be 50 and the slope is 30%, the ERCI would be 37 (50 minus 13) for tracked vehicles with grousers longer than 1-1/2 in.; 35 (50 minus 15) for tracked vehicles with grousers shorter than 1-1/2 in.; and 30 (50 minus 20) for wheeled vehicles. The determination of "go" or "no go" on sloping terrain is based on a comparison of the vehicle cone index with the ERCI for the vehicle class. If the VCI is greater than the ERCI, vehicles of this type will not be able to climb the slope; if the VCI is less than the ERCI, the slope is considered negotiable. The ERCI can also be applied and, if desired, mapped in regard to level terrain. In this case, the slope index is zero for all vehicle classes and the ERCI is equal to the RCI of the soil.

PART III: ANALYSIS OF DATA

28. The data were classified and analyzed in terms of both USCS and USDA soil types under a high-topography, wet-season condition, a low-topography, wet-season condition, and a low-topography, high-moisture condition. The following studies were conducted:

- a. A determination of means and standard deviations of cone index, remolding index, rating cone index, moisture content, dry density, and specific gravity for the 6- to 12-in. soil layer; cone index and moisture content for the 0- to 6-in. soil layer; and sheargraph shear strength for surface soils.
- b. A cumulative frequency analysis of rating cone index for the 6- to 12-in. soil layer for each USCS and USDA soil type and for all soils.

Basic Data

29. The data used in these analyses were obtained from 846 sites, 701 of which were located in six MERS study areas, including 103 sites in Chiang Mai, 117 in Khon Kaen, 77 in Nakhon Sawan, 160 in Lop Buri, 182 in Chantheburi, and 62 in Pran Buri. The remainder of the test sites were located in other sections of Thailand. The general locations of the sites are shown in fig. 4. The data were derived from six different test programs conducted for MERS during the period June 1962 through October 1965. The number of sites from each program which provided data for this study and for each analysis is shown in the following tabulation. The procedures

	Prelim- inary <u>Survey</u>	Traffic- ability <u>Classifi- cation</u>	Sur- face <u>Compo- sition</u>	Soil <u>Moisture- Strength</u>	CRREL <u>Air- photo Pattern</u>	Terrain- Vehicle <u>Tests</u>	Total
Number of sites	165	238	224	75	121	23	846
Mean and standard deviation							
Wet-season condition							
CI, 0-6 in.	160	238	224	75	105	23	825
CI, 6-12 in.	157	238	224	75	105	23	822
RI and RCI,* 6-12 in.	91	193	146	70	69	14	583
Sheargraph shear strength	--	227	197	50	--	22	496
Moisture content, 0-6 in.	145	238	106	75	105	22	691
Moisture content, 6-12 in.	130	238	105	75	104	20	672
Dry density, 6-12 in.	116	193	29	75	--	10	423

(Continued)

* Also used in analysis of cumulative frequency.

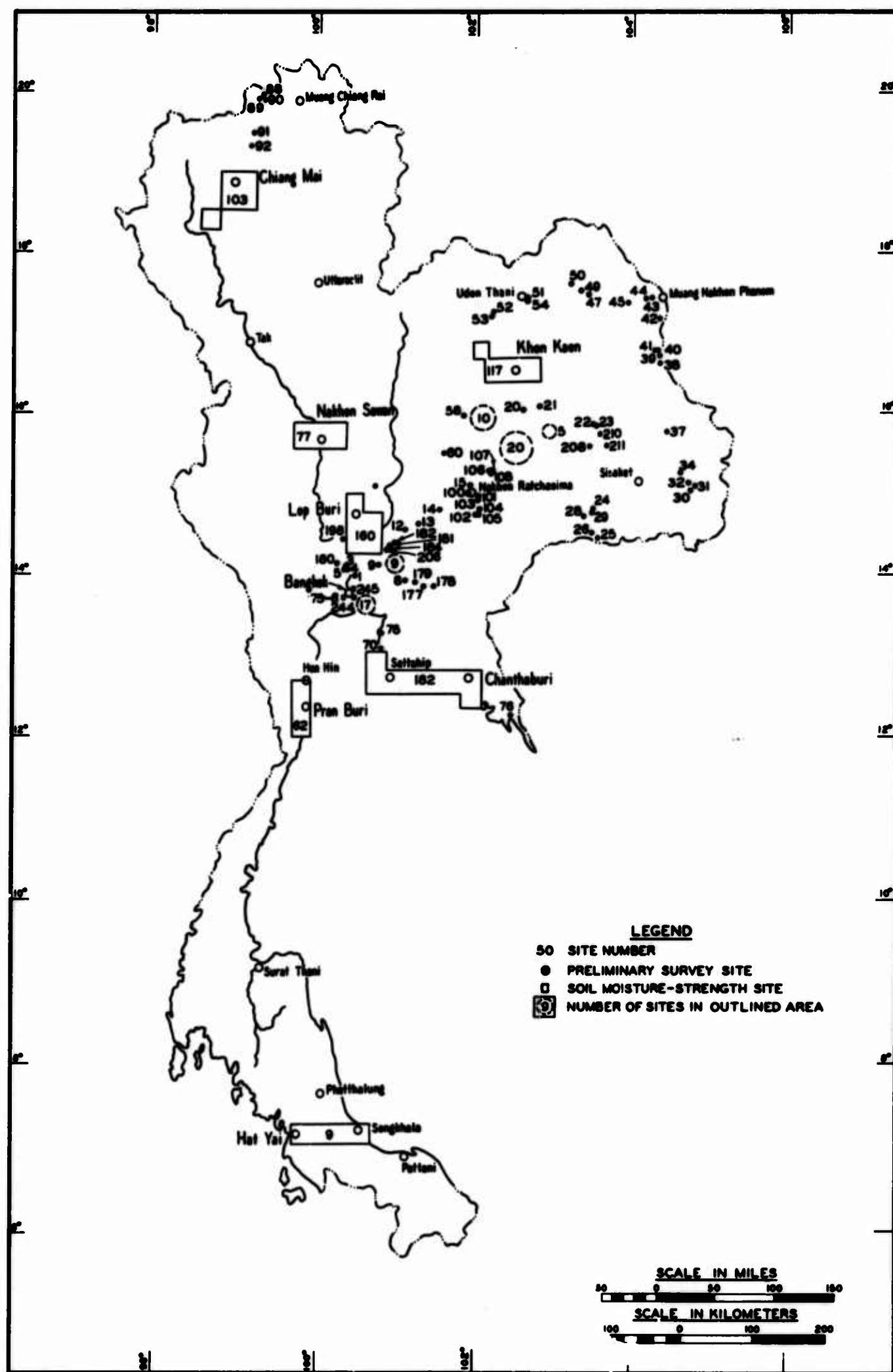


Fig. 4. General location of study sites

Prelim- inary Survey	Traffic- ability Classi- fication	Sur- face Compo- sition	Soil Moisture- Strength	CRREL Air- photo Pattern	Terrain- Vehicle Tests	Total	
Number of sites	165	238	224	75	121	23	816
Mean and standard deviation							
High-moisture condition							
CI, 0-6 in.	70	72	64	40	7	15	268
CI, 6-12 in.	69	72	63	40	7	15	266
RI and RCI,* 6-12 in.	55	67	49	38	7	14	230
Sheargraph shear strength	--	43	30	4	--	15	92
Moisture content, 0-6 in.	63	72	50	40	--	15	240
Moisture content, 6-12 in.	61	72	50	40	--	14	237

* Also used in analysis of cumulative frequency.

used in obtaining data in each program are discussed in Appendix A; the data are presented in tables Al-A6.

Method of Computation

30. The General Electric 225 electronic digital computer was employed in computations for this study. Two computer programs were required, one to compute the mean and standard deviation values and one to determine the frequency of occurrence of rating cone index. Data for these programs were supplied to the computer by means of punched IBM cards. These cards form a data retrieval system containing for each site the characteristics of the site (e.g. geographic location, topography class, topographic position, slope, land use, vegetation, etc.), soil data (e.g. percent grain sizes, Atterberg limits, USCS and USDA soil type, specific gravity, organic content, etc.), trafficability data (including CI, RI, RCI, sheargraph measurements, moisture content, and density for wet-season and high-moisture conditions, etc.), and climatological data (e.g. longtime average annual rainfall and temperature, etc.). For a given site, eight IBM cards are required to store approximately 125 pieces of information describing the site, soil, trafficability conditions, and climate.

Mean and Standard Deviation Values of Soil Properties

31. This study establishes the statistical mean and standard deviation values of cone index and moisture content for the 0- to 6- and

6- to 12-in. soil layers; remolding index, rating cone index, dry density, and specific gravity for the 6- to 12-in. soil layer; and sheargraph shear strength for the surface soil. Values for the dynamic soil properties, including moisture content, cone index, remolding index, rating cone index, and sheargraph shear strength, were computed for each of the three topography-moisture condition categories. Values for the static soil properties, including density and specific gravity, were computed only for a wet-season condition (high and low topography, respectively). Data are presented for each of the soil types in the USCS and USDA system in tables 1-7. The mean values in each table, except those for moisture content (table 5), are arranged from top to bottom in decreasing order; the moisture contents are arranged in increasing order. Where data are presented for both the 0- to 6- and 6- to 12-in. layers (tables 1 and 5), the soil types are arranged in order of mean values of the 6- to 12-in. layer. Where data are presented for soil-to-soil shear and soil-to-rubber shear (table 4), the soil types are arranged in order of mean values of soil-to-soil shear.

32. The data were analyzed in terms of mean (\bar{x}) and standard deviation (s) because these are probably the most widely used and most readily understood statistical measures. The mean (commonly termed arithmetic mean or average) is computed by summing the individual measurements and dividing by the total number of measurements. The standard deviation is a measure of the dispersion of the data around the mean. The standard deviation for less than 30 measurements was computed by means of the formula

$$s = \sqrt{\frac{\sum(x - \bar{x})^2}{n - 1}}$$

where

Σ = the sum of

$(x - \bar{x})$ = the deviation of an individual measurement from the mean of all measurements

n = the number of measurements

The -1 was omitted from the denominator of the formula when 30 or more

measurements were used in the computation. When the number of measurements for the specific condition exceeds 30, the interval defined by +1 and -1 standard deviation from the mean will usually contain approximately 68% of the data. Assuming the data are universally valid, if three additional measurements were taken, the values of two would usually fall within this interval. Mean and standard deviation values of a condition with fewer than 30 measurements, and especially of a condition with fewer than 5 measurements, should be viewed with skepticism.

33. The data in table 5 show that mean moisture contents for a given soil type are generally highest under a low-topography, high-moisture condition, intermediate under a low-topography, wet-season condition, and lowest under a high-topography, wet-season condition. If data had been developed for a high-topography, high-moisture condition, the mean moisture content would probably lie between those for the low-topography, wet-season condition, and the low-topography, high-moisture condition. This consistent pattern for all soil types (except a few with mean values that are based on relatively few observations and are therefore questionable) is presumed to be evidence in support of the proper identification of site data into the three arbitrary space-time categories used in this report.

Analysis of strength

34. Cone index. The results of the analysis of CI are given in table 1. The data show mean cone indexes that are generally highest for the USCS coarse-grained soils with fines and USDA gravelly and sandy soils, intermediate for the USCS fine-grained soils and USDA loamy soils, and lowest for the USCS organic soil (OH) and USDA silty and clayey soils. Exceptions are the USCS low-plasticity soils (CL-ML and ML) of the 6- to 12-in. layer which have the highest mean cone indexes of all soils under low-topography, wet-season and high-moisture conditions. (The maximum mean value, for GC, is based on one sample and, therefore, is not reliable.) The data also show higher cone indexes for the 6- to 12-in. soil layer than for the 0- to 6-in. layer; the mean cone indexes for all soils under each of the three topography-wetness conditions range from 57 to 78 units higher in the 6- to 12-in. layer than in the 0- to 6-in. layer.

35. The mean and standard deviation values for each of the soil

types and for all soils of a wetness condition are higher than those reported for temperate climates.¹ This apparent difference can be accounted for by differences in the procedures used in the two studies for measuring cone index. In the temperate-soil study, the capacity of the cone penetrometer was 300 (0.5-in. cone), whereas in this study the capacity of the instrument was extended to 750 (0.2-in. cone) in order to satisfy the needs for soil strength data for other engineering purposes. The average cone index for firm soil is higher when measured with the 0.2-in. cone. For example, the soil tested with the 0.5-in. cone may give several 300+ readings, whereas the same soil tested with the 0.2-in. cone may give readings of 420, 480, etc.

36. Remolding index. The results of the analysis of RI are given in table 2. A comparison of the mean RI's for all soils shows lower average RI's for the low-topography positions. The data show an average RI of 1.03 for soils under high-topography, wet-season condition, an average RI of 0.76 for soils under low-topography, wet-season condition, and an average RI of 0.66 for soils under low-topography, high-moisture condition. Under each topography-moisture condition, the mean remolding indexes are generally highest for the USCS silty, coarse-grained and highly plastic, fine-grained soils and USDA sandy soils, lowest for the USCS low-plasticity, fine-grained soils and USDA loamy soils, and intermediate for the remaining soils. For the moisture levels considered in this report, relatively few soil types have mean RI's greater than 1.0.

37. Rating cone index. The results of the analysis of RCI are given in table 3. Like those for cone index, the data generally show rating cone indexes that are highest for the USCS coarse-grained soils with fines and USDA sandy soils, intermediate for the fine-grained soils, and lowest for the USCS organic soil (OH). The mean RCI for all soils under wet-season condition is about 60 units higher for high-topography than for low-topography position (i.e. 180 versus 121 RCI), and the mean RCI for low-topography position is 35 units higher under the wet-season condition than under the high-moisture condition (i.e. 121 versus 86 RCI). Because of test procedures that provide higher cone indexes in this study, the rating cone indexes are higher and the means and standard deviations are

appreciably greater than those for comparable soils in a temperate climate (see paragraph 35 for an explanation).

38. Sheargraph shear strength. The results of the analysis of sheargraph shear strength of the surface soil for a normal load of 10 psi are given in table 4. The soil types are those for the 0- to 6-in. layer. A comparison of the mean values for a given topography-moisture condition shows little difference between most soil types. The mean shear strengths for soil-to-soil and soil-to-rubber shear appear to be the highest for the high-plasticity and lowest for the low-plasticity USCS soils. A comparison of the mean values for all soils shows a decrease in strength with an increase in the moisture level of the soil for soil-to-soil shear. Only a slight decrease in strength is associated with an increase in moisture level for soil-to-rubber shear. Because the number of samples for most soil types was insufficient for proper statistical analysis, and because the soil type of the 0- to 6-in. layer may, in some cases, be different from that of the surface soil, the results and conclusions drawn from this analysis should be viewed with caution.

Analysis of moisture content

39. The results of the analysis of moisture content are given in table 5. The moisture content is inversely proportional to the soil strength. The data show mean moisture contents to be lowest for the USCS coarse-grained soils with fines and USDA gravelly and sandy soils, intermediate for the USCS low-plasticity, fine-grained soils and USDA loamy soils, and highest for the USCS high-plasticity and organic soils and USDA clayey soils. The mean moisture contents for all soils of the 0- to 6- and 6- to 12-in. layers are about 5% higher for low-topography than for high-topography, wet-season condition and those for low-topography position are about 4% higher for high-moisture than for wet-season condition. Also, mean moisture contents of all soils are about 2% higher for the 0- to 6-in. layer than for the 6- to 12-in. layer.

Analysis of dry density

40. The results of the analysis of dry density are given in table 6. Experience has indicated that changes in dry density of surface soils do not significantly affect their trafficability properties. However, the

density data, along with specific gravity and moisture content data, can be used to estimate the percent saturation of a soil, which is an indicator of the degree of wetness. In this study the density data were analyzed for high- and low-topography, wet-season conditions. The data show densities that are generally highest for the USCS coarse-grained soils with fines and low-plasticity, fine-grained soils and USDA gravelly and sandy soils, intermediate for the USCS moderately plastic, fine-grained soils and USDA loamy soils, and lowest for the USCS highly plastic and organic soils and USDA clayey soils. The mean density for all soils is about 2 lb per cu ft higher under a high-topography condition than under a low-topography, wet-season condition. A comparison of individual USCS soil types shows the density of all soils except CL and SM to be higher for the high-topography position than for the low-topography position. The CL and SM soil densities are slightly less in high positions than they are in low positions.

Analysis of specific gravity

41. The results of the analyses of specific gravity are given in table 7. The specific gravity is a static soil property that does not vary with moisture content; consequently, the data were analyzed only for a wet-season condition. The mean specific gravity for all soils of high topography is 0.04 higher than that for all soils of low topography. Specific gravities are highest for the USCS plastic soils and USDA gravelly and clayey soils, and lowest for the USCS low-plasticity and organic soils and USDA silty and sandy soils.

Cumulative Frequency Analysis of Rating Cone Index

Procedures and presentation of data

42. The data used in this analysis are the same that were used in the mean and standard deviation analyses of RCI under wet-season and high-moisture conditions, respectively. The only difference between this and the previous analysis is in the statistical treatment of the data.

43. RCI's for each soil type under each topography-moisture condition were grouped into intervals of 10 RCI's from 1 to 300 and 300+, i.e. 1 to 10, 11 to 20, 21 to 30...291 to 300, and 300+. The measurements in

each class for the group of 300+ observations were tallied and their percentage of the total number was computed. The percentages were added cumulatively, starting with the percentage of 300+ observations and progressing in order of decreasing RCI. Thus, the 300+ or the larger value of the highest RCI increment for which data were available always was 0% frequency, and the smaller value for the lowest RCI increment for which data were available was 100% frequency. The RCI at 50% frequency is the median value.

44. The data are plotted in cumulative frequency graphs in plates 2-5 for the USCS soil types and in plates 6-9 for the USDA soil types. Graphs for three moisture conditions are usually shown for each soil type. Data were not available for sandy clay (USDA type) and OL and Pt (USCS types), nor were data available for analysis of one or more of the wetness conditions in some of the other soil types. The number of samples (sites) used in each analysis is indicated on its graph.

45. It is noted that where an appreciable number of samples were available for analysis, the three curves drawn for each soil type seldom cross each other. Also, the general range of RCI increases from the high-moisture graph through that for low-topography, wet-season, to the high-topography, wet-season graph. This is taken to be evidence of proper categorization of the basic field data into the three general moisture conditions.

46. Graphs are used to show the manner in which RCI varied. For example, the solid-line curve for CL soils in plate 4 shows that 10% of the CL soils under a low-topography, high-moisture condition had RCI's greater than 127, 20% had values greater than 100, and 30% had values greater than 90, etc.

Estimating probability of vehicle "go"

47. The graphs can be used for estimating the probability of "go" for military vehicles. A soil for which the RCI is greater than the VCI will permit 50 vehicles to pass in straight-line echelon or one vehicle to execute severe maneuvers. Thus, the cumulative frequency corresponding to the VCI indicates the probability of a vehicle's success in a given

soil type under a given general moisture condition. For example, if it is known that the soil type is CL and that the water table is within 18 in. of the surface so that the soil is under a low-topography, high-moisture condition (but specific data on strength cannot be obtained), it can be hypothesized from plate 4 that the M48 tank (VCI = 49) would have a 76% probability of "go."

Analysis for all soils

48. An analysis was made of the cumulative frequency of RCI for all soils under wet-season and high-moisture conditions. The procedures of analysis were the same as those used in the analysis of each soil type (see paragraph 43). The curves developed from the analysis may be used to estimate the percentage of areas trafficable for a given vehicle under a given condition of moisture. A discussion of the curves and their use is presented in paragraph 73.

PART IV: SOIL TRAFFICABILITY CLASSIFICATION
SCHEME AND RELATED STUDIES

49. The soil trafficability classification scheme shown in tables 8 and 9 is essentially a listing of soil types in descending order of their median rating cone indexes under three conditions of moisture: high and low topography under wet-season conditions, and low topography under a high-moisture condition. Information for a high-topography, high-moisture condition was not included in the scheme because data were too few to permit proper analysis. Soil types according to both the USCS and the USDA soil classification system are employed. Thus the scheme can be considered a sixfold scheme for the classification of soils from a trafficability standpoint. The scheme considers the strength of soils in the 6- to 12-in. layer.

50. This part of the report summarizes the vehicle classification categories developed in an earlier study, and describes the soil trafficability classification scheme and its possible application in detail. Tables 10 and 11 supplement the classification scheme by providing specific data on the percent probability of "go" for military vehicles on level and sloping terrain for each of the three general moisture conditions and the two soil classification systems.

Vehicle Categories

51. Different military vehicles require different minimum soil strengths for operation. A soil condition that is easily trafficable for one vehicle may be impassable for another. Therefore, in order to make the soil trafficability classification meaningful, it was necessary to incorporate vehicle requirements into the scheme for estimating the probability of vehicle "go."

52. In an earlier study¹⁵ a system was developed for classifying vehicles on the basis of the minimum soil strength each required for 50 straight-line passes or one severe maneuver on level ground. This system is condensed and repeated here.

<u>Category</u>	<u>VCI Range</u>	<u>Vehicle and Vehicle Types</u>
1	20-29	M29C weasel, M76 otter, Canadian snowmobile, and some lightweight experimental vehicles. Example: VCI of M29C weasel = 25
2	30-49	Engineer and high-speed tractors with comparatively wide tracks and low contact pressures. Examples: VCI of D7 engineer tractor = 40; VCI of M114 armored personnel carrier = 37
3	50-59	Tractors with average contact pressures, tanks with comparatively low contact pressures, and some traileed vehicles with very low contact pressures. Example: VCI of M48 medium tank = 52
4	60-69	Most medium tanks, tractors with high contact pressures, and all-wheel-drive trucks and traileed vehicles with low contact pressures. Example: VCI of M135, 2-1/2-ton truck = 62.
5	70-79	Most all-wheel-drive trucks, a great number of traileed vehicles, and heavy tanks. Example: VCI of 1-1/2-ton, 4x4 dump truck = 73
6	80-99	A great number of all-wheel-drive and rear-wheel-drive trucks, and traileed vehicles intended primarily for highway use. Example: VCI of 1/2-ton, 4x2 pickup truck = 88
7	100 or greater	Rear-wheel-drive vehicles and others that generally are not expected to operate off roads, especially in wet soils. Example: VCI of 5-ton, 4x2 dump truck = 119

The vehicle cone indexes for individual vehicles within the categories are included in Appendix A of reference 15.

Soil Trafficability Classification Scheme, Level Terrain

53. The soil trafficability classification scheme for level terrain is presented in USCS terms in table 8 for high and low topography under wet-season conditions, and for low topography under a high-moisture condition. The scheme is presented in USDA terms in table 9 for the same set of moisture conditions. Information presented in the scheme for each soil type includes a general estimate of the probability of "go" on level terrain for vehicles of various categories. Measurements of soil strength are also included.

Classification of vehicle "go"

54. For the sake of simplicity of presentation, the percent probabilities of vehicle "go" have been arbitrarily classified as follows:

Excellent	greater than 90% probability of "go"
Good	76 to 90% probability of "go"
Fair	50 to 75% probability of "go"
Poor	10 to 49% probability of "go"
No "go"	less than 10% probability of "go"

The probability-of-"go" information is illustrated in tables 8 and 9 by a series of bar graphs, one for each soil type.

Procedures for deriving "go" information

55. The vehicle cone indexes corresponding to 10, 50, 75, and 90% probability of "go," the limiting values of the vehicle "go" groupings, were derived from the cumulative frequency rating cone index graphs (plates 2-9). For example, from the CL soil graph for a low-topography, high-moisture condition (plate 4) it can be seen that the RCI's at 10, 50, 75, and 90% cumulative frequency are 128, 74, 50, and 39, respectively. This means that the soil strength will be greater than 128 RCI 10 times out of 100, greater than 74 RCI 50 times out of 100, greater than 50 RCI 75 times out of 100, and greater than 39 RCI 90 times out of 100. Table 8 shows that vehicles with a VCI greater than 128 will have less than a 10% probability of "go"; those with a VCI ranging from 74 to 128 will have 50% probability of "go"; those with a VCI ranging from 50 to 74 will have a 50 to 75% probability of "go"; those with a VCI ranging from 39 to 50 will have a 76 to 90% probability of "go"; and those with a VCI less than 39 will have greater than 90% probability of "go."

Reliability of "go" information

56. The probability lines delineating the vehicle "go" groupings on the bar graphs in tables 8 and 9 are solid where the data were based on more than four samples and the information shown was considered to be reliable. The lines are broken where less than five samples were used in the analysis or the data were otherwise questionable. The positioning of these

broken lines was based on an assumed RCI estimated from the textural, plasticity, and organic properties of the soil.

57. It should be noted particularly that the occurrence of obstacles was not considered in the probability of "go" estimates for level or sloping terrain. Obstacle components of terrain, such as trees, hedges, dikes, and streams, that present a definite deterrent or obstruction to mobility of vehicles would certainly decrease the probability of "go."

Soil strength information

58. The mean CI, RI, surface sheargraph shear strength for a load of 10 psi, and RCI, and the range of RCI (discussed in Part III) are presented again in tables 8 and 9. It may be noted that the mean RCI for a soil generally is greater than its median RCI, which is the same value as the VCI at 50% probability of "go."

Probability of Vehicle "Go" on Level and Sloping Terrain

59. The percent probabilities of vehicle "go" on level and sloping soils classified in terms of the USCS are presented in table 10 for both high and low topography under wet-season conditions, and for low topography under a high-moisture condition; these data on soils classified in terms of the USDA system are presented in table 11. The data for each soil type-moisture condition include the probabilities of negotiation of level terrain (0% slope) and slopes of 15, 30, and 45% by vehicles in each of the seven vehicle categories. The probabilities were established for the median VCI within vehicle categories 1 through 6 (i.e. 25 VCI for category 1, 40 VCI for category 2, etc.) and for the minimum VCI (100) in category 7, for tracked vehicles with grousers shorter than 1-1/2 in. and for wheeled vehicles. Tracked vehicles with grousers longer than 1-1/2 in. would have a slightly better probability of "go" on sloping soils than that computed for tracked vehicles with shorter grousers. For all practical purposes, however, the difference is insignificant, and the probabilities of "go" listed under the "tracked" column in tables 10 and 11 may be applied to both types of tracked vehicles. The probability of "go" established for a vehicle with a median VCI of a category will closely approximate and may

be used to estimate the probabilities of "go" for other vehicles within the same category.

Procedure for deriving "go" information

60. The probability data were obtained from the cumulative frequency rating cone index graphs presented in plates 2-9. If VCI is substituted for RCI and probability of "go" for cumulative frequency, an estimate of the probability of "go" on level terrain can be made for any vehicle for which a VCI has been computed (discussed in paragraph 47). In order to determine the probability of "go" for a given slope, the slope index, derived from the curve of the vehicle type shown in plate 1, was added to the VCI and the probability of "go" for the soil type-moisture condition was based upon the cumulative frequency reading for this new VCI value. For example, the probabilities of "go" for tracked and wheeled vehicles of 55 VCI (median VCI of category 3) on 0, 15, 30, and 45% slopes of a silt loam soil area under low-topography, wet-season condition were derived as follows. The VCI was substituted for RCI in the abscissa, and the probability of "go" was substituted for cumulative frequency in the ordinate of the silt loam low-topography, wet-season condition graph shown in plate 8. At 55 VCI the probability of "go," read from the graph, was 87%. This value applies to tracked and wheeled vehicles at 0% slope. The slope index at 15% slope, read from the curves of plate 1, was 7 for tracked vehicles with grousers shorter than 1-1/2 in. and 9 for wheeled vehicles. This index was added to the VCI to provide values of 62 (55 plus 7) for the tracked vehicles and 64 (55 plus 9) for the wheeled vehicles. The probabilities of "go" for the VCI values of 62 and 64, read from the graph in plate 8 for silt loam, low topography, and the wet season, were 80 and 79%, respectively. At 30% slope, the slope indexes were 15 and 20, the VCI's became 70 and 75, and the resulting probabilities of "go" were 74 and 68% for the two vehicle types, respectively; at 45% slope, the slope indexes were 27 and 40, the VCI's became 82 and 95, and the probabilities of "go" read from the graph were 60 and 49%, respectively. The probability of "go" can be estimated for any slope and for any vehicle for which a VCI has been computed by using data read from the proper soil type-moisture condition graph and

slope index curve, and following the procedures discussed above.

Reliability of "go" information

61. The probability values for a wet-season condition are undoubtedly influenced by the high-moisture, low-strength bias associated with the basic data (previously discussed in paragraph 24a); thus, the actual probability of "go" would be somewhat higher than that indicated.

62. The number of samples used in the analysis of a particular soil type-moisture condition provides a rough estimate of its reliability. Analyses based on more than 30 samples would generally have a small plus and minus probability error, i.e. the true probability based on an infinite number of the same type of samples would not vary by more than plus or minus a small standard error of estimate. The probabilities of "go," therefore, are considered to be of good reliability. An analysis based on fewer than 30 samples and especially fewer than 15 samples, but more than 4 samples, would have a moderate standard error of estimate (estimated at ± 10 to $\pm 25\%$ probability of "go"). Probabilities based on an analysis of this number of samples are considered to be of only fair reliability and should be viewed with skepticism. Five was arbitrarily chosen as the minimum number of samples needed to provide a reasonably reliable probability value; probabilities of "go" were only estimated for the analyses based on fewer than 5 samples. The estimations were based on assumed strengths estimated from the textural, plasticity, and organic properties of the soil.

Application of Information for Estimating
Trafficability Conditions

63. The information presented in the trafficability classification scheme and probability of "go" tables should be especially useful in military intelligence, military-operations planning, and vehicle-design work. The information may be applied in quantitative or qualitative terms to military problems or to studies of a tactical or strategic nature.

64. The information can be used to estimate trafficability conditions for areas in Southeast Asia that, in most cases, will not be accessible for measurement. Information needed for proper analysis includes

climate and weather, topographic position or water-table conditions, and soil type. Climatological and weather data can be obtained from meteorological records; data on topographic position (and slope if desired) are available from large-scale topographic maps, and information on soil type can be obtained from engineering or pedological reports. It may be reasoned that trafficability-prediction information would not be needed for accessible areas because direct strength measurements with the cone penetrometer could be taken where and when desired. The information, however, could be used in these areas to facilitate a particular study, e.g. the speedy selection of one of several possible access routes, the selection of possible barrier areas (mine fields, etc.) that normally would have good to excellent probabilities of "go," or the selection of broad areas providing the best positions for offensive or defensive operations.

Use of trafficability classification scheme

65. The following paragraphs explain by means of examples how the classification scheme can be used.

66. Season, soil type, and topography. If it is known that the season is the wet season, the soil type is CL, and the topography is low topography, the data in table 8 for low-topography, wet-season condition would be used to determine trafficability. In this case, the probability of "go" on the CL soil would be less than 10% for vehicles with VCI's greater than 185, between 10 and 50% for vehicles with VCI's between 89 and 185, between 50 and 75% for vehicles with VCI's between 58 and 89, between 76 and 90% for vehicles with VCI's between 42 and 58, and greater than 90% for vehicles with VCI's less than 42.

67. Season, soil type, topography, plus rainy weather or high-water-table condition. If, in addition to the knowledge of the season, soil type, and topography, it is known that the soil has been subjected to several days of rain, or if a high water table is known to exist, the low-topography, high-moisture condition data presented in table 8 (or table 9 for USDA soils) would be used. The probability of vehicle "go" on CL soils under these conditions would be less than 10% for vehicles with VCI's greater than 128, between 10 and 50% for vehicles with VCI's between 74 and

128, between 50 and 75% for vehicles with VCI's between 50 and 74, between 76 and 90% for vehicles with VCI's between 39 and 50, and greater than 90% for vehicles with VCI's less than 39.

68. Probability of one straight-line pass for a vehicle. For clayey soils, an RCI equal to about 50% of the VCI usually will permit one straight-line pass of the vehicle.¹³ The probability of a successful operation may be derived from the classification scheme (tables 8 and 9) by projecting a line down from the VCI value multiplied by one-half and reading the probability at its intersection with the particular graph of soil type-wetness condition under consideration. For example, a vehicle with a VCI of 100 would have a recomputed index of 50 (100×0.50). The probability of its making one straight-line pass on a CL soil under low-topography, wet-season condition (from table 8) would be 76 to 90% (estimated at 83%).

Use of probability of "go" tables

69. The following paragraphs explain how the probability tables (tables 10 and 11) can be used. The particular data to be used, like that for the soil trafficability classification scheme, will depend upon the amount and type of information known, i.e. the topography, moisture condition, and the soil type and system in which the soil is classified.

70. Probability of "go" for vehicles within specific VCI categories. The probability of "go" on sloping ground may be estimated for tracked or wheeled vehicles within VCI categories. If, for example, a low-topography, high-moisture condition prevails and the soil is a CL with a 15% slope, the probability of "go" for tracked vehicles in category 3 (VCI 50 to 59) would be 63% (from table 10).

71. Comparison of probabilities between two vehicle categories. The probabilities of "go" can be compared for vehicles in two different categories to estimate the advantage that vehicles in one category would have over vehicles in another. For example, under the same set of conditions as those stated in the preceding paragraph, tracked vehicles in category 5 (VCI 70 to 79) would have a 40% probability of "go" (table 10). Since the table shows the probability of "go" for vehicles in category 3 to be 63%, the difference, 23% (63 minus 40), indicates the advantage in performance of vehicles in category 3.

72. Comparison of probabilities for different soil types and slopes.

The probabilities of "go" for vehicles within a given category can be compared for two or more different soil types and slopes in order to determine quantitatively the advantage that one route would have over another. For example, if tracked vehicles in category 3 were being considered for use in a low-topography area under a high-moisture condition (table 10), the probability of "go" along route A, a CH soil with maximum slopes of 30%, would be 40%; the probability of "go" along route B, a CL soil with maximum slopes of 15%, would be 63%. Thus, from the standpoint of soil type and slope, route B would have a decided advantage of 23% (63 minus 40) over route A.

Estimation of Percentage of Area Trafficable

73. Cumulative frequency curves of the RCI data for all fine-grained soils and coarse-grained soils with fines tested in Thailand are shown for wet-season (high and low topography) and high-moisture (low topography) conditions in plate 10. For purposes of comparison, a similar set of curves is also shown for humid-temperate soils of the United States. The cumulative frequency of RCI, in percent, is plotted for a 10-300 range of RCI. The curves in plate 10 permit one to estimate the percentage of area trafficable for a given vehicle under a wet-season or high-moisture condition. Because the data are biased toward wetter-than-average conditions, estimates of percentages of trafficable areas made from the curves will be smaller than actual, i.e. on the conservative side. Examination of the data reveals that in Thailand a vehicle with a VCI of 80 can make 50 passes in 60% of the soil areas under average conditions in the wet season, and in 40% of the low-lying soil areas under poorest trafficability conditions (high-moisture condition). The same vehicle can make 1 pass (vehicle cone index is 80×0.50 or 40 for 1 pass) in 89% of the area under average conditions in the wet season and in 79% of the low-lying areas under poorest trafficability conditions. It should be emphasized that passable areas are considered strictly in terms of the bearing strength of soils on level surfaces. The presence and orientation of slopes and obstacles and

consideration of the extent of areas of sand would affect the percentage of area trafficable. A comparison of the curves for Thailand and U. S. soils shows that the Thailand soils have slightly higher strengths (68 median RCI for the Thailand soils versus 63 for the U. S. soils) under high-moisture conditions and slightly lower strengths (97 median RCI for the Thailand soils versus 107 for the U. S. soils) under wet-season conditions.

PART V: CONCLUSIONS AND RECOMMENDATIONS

Conclusions

74. Based on the data and discussions presented herein, it is concluded that the scheme for classifying trafficability of Thailand soils has the following advantages:

- a. It rates soil types (both USCS and USDA) according to their median rating cone index under high- and low-topography, wet-season conditions, and under low-topography, high-moisture condition.
- b. From a consideration of cumulative frequency of occurrence of rating cone index, it permits a ready estimate of the chances of successful travel of any military vehicle (whose vehicle cone index is known) on any soil type under three space-time moisture conditions.

75. The conclusions that follow are based on the soil information derived from the various analyses of the basic data.

- a. Soil strength.
 - (1) Soils in low-lying positions (low topography) generally have lower strengths than those in high-lying positions (high topography). (Paragraphs 34-38 and tables 1-4.)
 - (2) The initial strength (cone index) of the 6- to 12-in. soil layer ranges from 57 to 78 units higher than that of the 0- to 6-in. layer. (Paragraph 34 and table 1.)
 - (3) The remolding indexes are generally highest for the silty coarse-grained soils and highly plastic fine-grained soils and lowest for the low-plasticity and loamy fine-grained soils. (Paragraph 36 and table 2.)
 - (4) The remolding index of a soil decreases with an increase in the moisture level. Under highest moisture level (poorest trafficability condition) the soils retain an average of two-thirds of their initial strength after remolding. (Paragraph 36 and table 2.)
 - (5) The initial and remolded strengths of soils (cone index and rating cone index) are highest for the USCS coarse-grained soils with fines and USDA sandy soils, intermediate for the fine-grained soils, and lowest for the organic soils. The rating cone index averages 60 units higher for high-topography than for low-topography position, and that for low-topography positions averages 35 units higher under wet-season condition than under

high-moisture condition. (Paragraphs 34 and 37 and tables 1 and 3.)

- (6) Soils in Thailand have slightly higher strengths under high-moisture condition and slightly lower strengths under wet-season condition than do soils in humid-temperate areas of the United States. (Paragraph 73 and plate 10.)

b. Soil-moisture content.

- (1) For a given topography-moisture level the moisture contents are lowest for the USCS coarse-grained soils with fines and USDA sandy soils, intermediate for the USCS low-plasticity, fine-grained soils and USDA loamy soils, and highest for the USCS high-plasticity and organic soils and USDA clayey soils. (Paragraph 39 and table 5.)
- (2) The average moisture contents in the wet season are about 5% higher for low-topography than for high-topography positions, and those in low-topography positions are about 4% higher under high-moisture than under wet-season conditions. (Paragraph 39 and table 5.)

c. Density.

- (1) The densities are generally highest for the USCS coarse-grained soils with fines and low-plasticity fine-grained soils and USDA gravelly and sandy soils, and lowest for the USCS highly plastic and organic soils and USDA clayey soils. (Paragraph 40 and table 6.)
- (2) The average density is about 2 lb per cu ft higher under high-topography than under low-topography, wet-season condition. (Paragraph 40 and table 6.)

d. Specific gravity.

- (1) Specific gravities are highest for the USCS plastic soils and USDA gravelly and clayey soils, and lowest for the USCS low-plasticity and organic soils and USDA silty and sandy soils. (Paragraph 41 and table 7.)
- (2) The specific gravity of soils on high-topography position averages 0.04 more than that on low-topography position.

e. Probability of "go."

- (1) The probability of "go" for a given vehicle on a given soil type is highest for high-topography, wet-season condition, intermediate for low-topography, wet-season condition, and lowest for low-topography, high-moisture condition. For a given topography-moisture condition, the probability of "go" decreases for soils in the

following order: clean, coarse-grained soils, coarse-grained soils, coarse-grained soils with fines, fine-grained soils, and organic soils. (Table 8.)

- (2) On a basis of soil strength only, vehicles with vehicle cone indexes less than 80 (i.e. practically all military vehicles except those intended primarily for highway use) can negotiate at least 60% of the soil areas during average wet-season conditions and at least 40% of the areas during poorest trafficability conditions. (Paragraph 73 and plate 10.)

Recommendations

76. It is recommended that:

- a. In order to improve the reliability of the probability-of- "go" information that has been derived from a statistical analysis of existing data, new or additional rating cone index information should be collected on USCS soil type-moisture conditions with fewer than 15 observations. This information should include data from all soil types except SM and CL under high-topography, wet-season condition; SP-SM, SM-SC, and organic soil types under low-topography, wet-season condition; and SP-SM, SC, CL-ML, and organic soil types under low-topography, high-moisture condition.
- b. Sheargraph measurements should be incorporated in the trafficability classification scheme if investigations in progress show that these measurements can be related to vehicle traction.

LITERATURE CITED

1. U. S. Army Eng'neer Waterways Experiment Station, CE, Trafficability of Soils; Soil Classification, by M. P. Meyer and S. J. Knight. Technical Memorandum No. 3-240, Supplement 16, Vicksburg, Miss., August 1961.
2. , Environmental Factors Affecting Ground Mobility in Thailand; Appendix C: Soil Trafficability. Technical Report No. 5-625, Vicksburg, Miss., May 1963.
3. , A Quantitative Method for Describing Terrain for Ground Mobility; Surface Composition. Technical Memorandum No. 3-726, vol II, Vicksburg, Miss. (not yet published).
4. , Soil Moisture-Strength Characteristics of Selected Soils in Thailand (not yet published).
5. , Mobility Environmental Research Study: A Quantitative Method for Describing Terrain for Ground Mobility; Selected Air-Photo Patterns of Terrain Features, by R. E. Frost and others. Technical Report No. 3-726, vol VI, Vicksburg, Miss., May 1966.
6. , An Analytical Model for Predicting Cross-Country Vehicle Performance (not yet published).
7. , The Unified Soil Classification System. Technical Memorandum No. 3-357, vol 1, Vicksburg, Miss., March 1953 (Rev April 1960).
8. U. S. Bureau of Plant, Industry, Soils, and Agriculture Engineering, Soil Survey Manual. U. S. Department of Agriculture Handbook No. 18, U. S. Government Printing Office, Washington, D. C., August 1951.
9. U. S. Army Engineer Waterways Experiment Station, CE, Trafficability of Soils; A Summary of Trafficability Studies Through 1955, by S. J. Knight. Technical Memorandum No. 3-240, Supplement 14, Vicksburg, Miss., December 1956.
10. U. S. Department of the Army, Soils Trafficability. Technical Bulletin TB ENG 37, U. S. Government Printing Office, Washington, D. C., July 1959.
11. Cohron, Gerald T., "Soil sheargraph." Agricultural Engineering, vol 44, No. 10 (October 1963), pp 554-556.
12. , "Cohron sheargraph for shearing strength measurements." Journal, Environmental Sciences, vol 6, No. 6 (December 1963), pp 17-20.
13. U. S. Army Engineer Waterways Experiment Station, CE, One-Pass Performance of Vehicles on Fine-Grained Soils, by C. J. Nuttall, Jr., C. W. Wilson, and R. A. Werner. Contract Report No. 3-152, Vicksburg, Miss., July 1966.

14. U. S. Army Engineer Waterways Experiment Station, CE, Water Table Prediction Study (not yet published).
15. _____, Trafficability of Soils; Vehicle Classification. Technical Memorandum No. 3-240, Supplement 9, Vicksburg, Miss., May 1951.

Table 1
Mean and Standard Deviation Values for USCS and USDA Soil Types
 Cone Index, 0- to 6-in. and 6- to 12-in. Layers

Type	USCS						USDA						
	0- to 6-in. Layer			6- to 12-in. Layer			0- to 6-in. Layer			6- to 12-in. Layer			
	n	\bar{x}	s	n	\bar{x}	s	Type	n	\bar{x}	s	n	\bar{x}	s
<u>High-Topography, Wet-Season Condition</u>													
GC	--	--	--	1	617	--	GL	2	137	76	4	617	188
GM	--	--	--	2	462	407	GSCL	1	171	--	2	524	320
SP-SM	1	273	--	--	--	--	SC	--	--	--	2	511	338
SM-SC	3	163	71	10	378	238	GSL	1	273	--	7	340	258
ML	13	197	115	11	304	259	LS	17	290	164	22	301	226
SC	7	155	85	17	286	187	CL	9	204	162	8	278	207
SM	42	243	149	59	269	209	SL	35	184	129	49	264	189
CL	8	100	63	23	258	221	SiC	2	127	83	2	252	27
CH	8	168	185	15	205	163	L	19	149	106	28	218	206
MH	17	128	66	14	179	76	SIL	10	98	42	6	210	261
CL-ML	3	89	18	8	135	41	SCL	6	145	63	9	199	133
							GCL	--	--	--	2	198	33
							SiCL	1	126	--	4	188	121
							C	3	142	79	6	171	51
							S	5	215	72	6	153	37
							GSIL	--	--	--	1	125	--
All soils	102	188	132	160	258	200	All soils	111	185	129	158	263	205
<u>Low-Topography, Wet-Season Condition</u>													
GC	--	--	--	1	430	--	GCL	1	98	--	4	522	293
CL-ML	12	156	103	41	313	188	GL	--	--	--	2	385	198
ML	51	192	151	50	303	206	GSiCL	--	--	--	1	371	--
SM	61	239	160	95	282	176	GSL	3	246	150	5	349	216
SC	10	181	145	35	264	190	GSCL	--	--	--	2	290	198
SM-SC	7	248	134	20	250	183	SL	84	218	155	140	252	171
CL	84	155	152	241	209	160	LS	28	186	116	40	250	143
SP-SM	1	100	--	9	193	103	S	5	233	289	14	240	146
CH	57	74	49	119	134	90	CL	14	100	55	51	229	159
MH	28	99	44	35	125	73	L	57	145	125	122	221	172
OH	8	52	45	6	31	13	SIL	83	142	123	98	210	172
							SCL	3	104	45	34	195	139
							C	25	63	35	43	184	141
							SiCL	32	114	129	51	154	144
							Si	4	300	299	2	141	5
							SiC	23	63	58	39	97	51
All soils	319	158	142	652	217	168	All soils	362	152	138	648	216	166
<u>Low-Topography, High-Moisture Condition</u>													
CL-ML	7	119	117	20	266	209	GSL	--	--	--	1	311	--
ML	28	124	109	21	257	221	Si	2	337	392	--	--	--
SM-SC	1	249	--	4	249	259	LS	9	145	102	13	208	144
SM	19	171	159	32	201	114	S	4	259	327	6	207	134
SC	2	68	8	12	167	82	GCL	1	103	--	--	--	--
CL	38	74	30	98	127	55	SIL	23	85	40	26	190	180
MH	13	91	34	16	116	66	SL	30	126	75	46	178	141
SP-SM	1	78	--	2	100	35	L	31	83	36	58	167	139
CH	29	47	24	53	94	57	CL	12	76	39	22	158	76
OH	4	30	17	4	35	14	SCL	--	--	--	15	123	54
							C	16	61	35	18	122	60
							SiCL	15	63	37	30	105	58
							SiC	20	48	27	27	76	43
All soils	142	95	91	262	152	123	All soils	163	93	87	262	152	123

Note: n = number of samples; \bar{x} = mean or average; s = one standard deviation.

Table 2
Mean and Standard Deviation Values for USCS and USDA Soil Types
 Remolding Index, 6- to 12-in. Layer

USCS				USDA			
Type	n	\bar{x}	s	Type	n	\bar{x}	s
<u>High-Topography, Wet-Season Condition</u>							
SM	32	1.32	0.79	LS	12	1.62	0.96
CH	11	1.01	0.16	CL	5	1.19	0.12
MH	9	1.02	0.36	SiC	2	1.16	0.06
SM-SC	4	0.98	0.22	SL	29	1.04	0.57
SC	10	0.94	0.27	S	4	1.03	0.48
CL-ML	7	0.83	0.28	SCL	8	0.95	0.26
CL	16	0.82	0.27	SiL	5	0.92	0.29
ML	7	0.69	0.33	C	3	0.90	0.18
GM	1	0.51	--	SiCL	3	0.89	0.26
GC	1	0.45	--	L	23	0.83	0.28
				GSiL	1	0.71	--
				GSL	1	0.51	--
				GCL	1	0.51	--
				GL	1	0.45	--
All soils	98	1.03	0.55	All soils	98	1.03	0.55
<u>Low-Topography, Wet-Season Condition</u>							
SP-SM	6	1.31	0.68	S	9	1.34	0.69
SM	55	0.89	0.57	GSL	2	1.14	0.02
CH	101	0.88	0.24	LS	22	1.07	0.59
MH	34	0.79	0.28	C	32	0.87	0.25
SC	23	0.77	0.29	Si	1	0.86	--
CL	187	0.71	0.23	SiL	72	0.83	0.30
OH	5	0.62	0.12	SiCL	47	0.77	0.26
CL-ML	24	0.57	0.21	GSCL	1	0.77	--
ML	35	0.51	0.27	SiC	39	0.76	0.19
SM-SC	13	0.51	0.22	CL	38	0.75	0.20
				L	98	0.69	0.28
				SL	97	0.65	0.39
				SCL	26	0.64	0.16
				GCL	1	0.51	--
All soils	483	0.76	0.34	All soils	485	0.76	0.34
<u>Low-Topography, High-Moisture Condition</u>							
SP-SM	2	1.22	0.56	S	5	1.32	0.69
CH	50	0.79	0.24	LS	9	0.86	0.65
MH	16	0.66	0.21	SiL	21	0.78	0.29
CL	91	0.65	0.20	C	15	0.75	0.14
OH	4	0.65	0.11	CL	21	0.73	0.22
SC	11	0.64	0.30	SiCL	29	0.71	0.27
SM	20	0.53	0.31	SiC	27	0.68	0.17
ML	17	0.43	0.22	SCL	15	0.60	0.15
CL-ML	12	0.42	0.13	L	50	0.59	0.22
SM-SC	3	0.34	0.21	SL	38	0.47	0.27
All soils	226	0.66	0.31	All soils	230	0.66	0.31

Note: n = number of samples; \bar{x} = mean or average; s = one standard deviation.

Table 3

Mean and Standard Deviation Values for USCS and USDA Soil Types
Rating Cone Index, 6- to 12-in. Layer

USCS			USDA				
Type	n	\bar{x}	s	Type	n	\bar{x}	s
<u>High-Topography, Wet-Season Condition</u>							
GC	1	253	--	LS	12	325	268
SM	32	227	197	SIC	2	274	16
SC	10	221	165	GL	1	253	--
SM-SC	4	170	45	CL	5	245	89
CH	11	169	81	SCL	8	221	193
CL	16	150	125	SL	29	171	108
MH	9	148	83	S	4	145	69
CL-ML	7	118	62	C	3	145	69
ML	7	104	89	SICL	3	136	124
GM	1	89	--	L	23	124	91
				SIL	5	99	47
				GSIL	1	89	--
				GCL	1	89	--
				GSL	1	53	--
All soils	98	180	148	All soils	98	180	147
<u>Low-Topography, Wet-Season Condition</u>							
SP-SM	6	234	184	S	9	301	267
SM	55	197	170	GSL	2	293	94
SC	23	144	102	LS	22	230	164
CL-ML	24	108	74	C	32	141	129
CH	100	108	90	SL	97	121	123
CL	187	102	60	L	98	119	116
ML	34	101	91	SI	1	118	--
MH	33	90	57	CL	38	117	53
SM-SC	13	85	53	GSCL	1	116	--
OH	5	22	13	SIL	71	111	64
				GCL	26	91	56
				SICL	46	84	52
				SIC	39	78	54
				GCL	1	53	--
All soils	480	121	111	All soils	483	120	111
<u>Low-Topography, High-Moisture Condition</u>							
SP-SM	2	132	98	S	5	315	332
SM	22	129	114	LS	9	134	75
SC	11	113	106	CL	21	102	44
ML	17	100	98	SIL	21	94	46
CL	91	79	40	C	15	87	42
CH	50	70	44	L	50	85	69
MH	16	67	36	SCL	15	79	42
CL-ML	12	65	36	SL	38	75	82
SM-SC	3	47	37	SICL	29	66	33
OH	4	24	14	SIC	27	53	35
All soils	228	86	81	All soils	230	86	81

Note: n = number of samples; \bar{x} = mean or average; s = one standard deviation.

Table 4

Mean and Standard Deviation Values for USCS and USDA Soil Types
Sheargraph Shear Strength in psi at 10-psi Normal Pressure

Type	USCS			Rubber-to-Soil			Type	USDA			Rubber-to-Soil		
	n	\bar{x}	s	n	\bar{x}	s		n	\bar{x}	s	n	\bar{x}	s
<u>High-Topography, Wet-Season Condition</u>													
CL	4	8.88	1.23	4	7.45	0.85	SIL	1	9.00	--	1	7.10	--
MH	4	8.88	1.90	4	6.43	1.11	CL	4	8.98	1.09	5	6.56	1.86
CH	2	8.40	0.28	3	4.30	1.21	L	8	8.94	1.45	8	6.49	0.88
ML	4	8.33	1.36	4	6.00	0.59	SIC	1	8.60	--	1	5.70	--
CL-ML	3	8.13	1.95	3	6.70	0.96	SiCL	1	8.20	--	1	3.60	--
SM	11	7.61	1.00	11	5.24	0.76	SL	7	7.80	0.97	7	5.91	0.61
SC	2	7.20	0.99	2	5.90	1.13	LS	6	7.18	0.85	6	4.88	0.79
							SCL	1	6.50	--	1	5.10	--
							C	1	6.20	--	1	5.00	--
All soils	30	8.12	1.30	31	5.87	1.19	All soils	30	8.12	1.30	31	5.87	1.19
<u>Low-Topography, Wet-Season Condition</u>													
CH	18	8.07	1.24	18	5.73	1.45	SCL	1	10.00	--	1	6.90	--
CL	46	7.77	2.13	42	6.24	1.58	GCL	1	9.40	--	1	6.60	--
SM-SC	5	7.46	1.16	5	5.16	0.86	CL	10	8.36	1.99	8	6.43	1.13
SC	3	7.27	0.65	3	5.83	0.76	SIL	35	7.75	1.62	34	5.87	1.58
SM	31	7.23	1.46	31	5.25	1.04	SL	42	7.59	1.32	42	5.37	1.02
SP-SM	1	7.10	--	1	5.70	--	L	24	7.15	2.22	23	5.51	1.27
ML	18	7.06	1.95	17	5.26	1.09	S	1	7.10	--	1	5.70	--
CL-ML	8	6.76	2.39	7	5.34	1.28	SiCL	17	7.04	2.28	15	6.25	1.65
MH	10	6.02	1.88	7	5.31	1.01	C	5	6.98	2.26	3	5.83	0.97
							LS	12	6.33	0.64	12	4.98	0.63
							GSL	1	4.00	--	1	4.40	--
							SIC	2	3.65	2.33	1	3.30	--
All soils	140	7.39	1.88	131	5.66	1.35	All soils	151	7.37	1.84	142	5.64	1.32
<u>Low-Topography, High-Moisture Condition</u>													
CH	4	8.85	0.82	4	6.43	0.13	GCL	1	8.20	--	1	7.40	--
CL-ML	4	7.00	3.36	3	5.57	2.61	SIL	10	7.53	2.66	9	6.02	1.66
SM	6	6.68	1.35	6	4.90	0.49	SL	5	6.86	1.36	5	4.62	0.92
CL	16	6.67	3.11	12	5.68	1.81	CL	5	6.84	3.54	3	5.17	3.00
ML	5	4.84	2.03	4	4.35	1.49	C	3	6.33	3.00	1	6.40	--
MH	3	3.80	1.85	--	--	--	LS	4	5.93	0.77	4	4.73	0.51
							L	11	5.93	2.06	10	4.68	0.92
							SiCL	4	5.23	4.09	2	6.70	0.42
							SIC	1	2.00	--			
All soils	38	6.47	2.68	29	5.43	1.57	All soils	44	6.43	2.52	35	5.31	1.46

Note: n = number of samples; \bar{x} = mean or average; s = one standard deviation.

Table 5

Mean and Standard Deviation Values for USCS and USDA Soil Types
Moisture Content, % Dry Weight, 0- to 6-in. and 6- to 12-in. Layers

Type	USCS						USDA						
	0- to 6-in. Layer			6- to 12-in. Layer			0- to 6-in. Layer			6- to 12-in. Layer			
	n	\bar{x}	s	n	\bar{x}	s	n	\bar{x}	s	n	\bar{x}	s	
<u>High-Topography, Wet-Season Condition</u>													
SP-SM	1	11.0	--	--	--	--	LS	16	9.1	3.8	19	11.1	4.6
SM-SC	3	16.5	2.6	8	13.0	3.1	S	5	8.5	1.0	5	12.2	6.7
SM	39	12.9	6.5	49	13.4	7.3	GL	2	18.3	0.4	1	14.0	--
GC	--	--	--	1	14.0	--	SC	--	--	--	2	14.1	8.5
CL-ML	3	15.9	1.1	8	15.8	3.3	GSL	1	11.0	--	5	14.6	3.3
SC	7	20.5	5.1	14	18.0	4.5	GSCL	1	17.4	--	--	--	--
ML	13	19.0	5.9	11	18.6	8.2	SL	34	19.7	9.7	43	16.9	9.1
CL	8	22.7	5.0	20	18.8	4.6	GSCL	--	--	--	1	17.2	--
GM	--	--	--	1	22.4	--	SCL	5	19.9	9.8	8	18.8	4.4
CH	7	31.4	6.0	14	30.9	5.4	CCL	--	--	--	2	19.4	4.2
MH	17	41.6	8.5	14	39.1	8.3	L	17	27.5	13.6	27	23.8	11.5
							SIL	10	33.4	10.2	6	24.5	8.2
							C	2	23.3	10.3	6	28.6	8.3
							CL	8	28.5	11.3	7	29.1	9.7
							SIC	2	31.8	4.5	2	31.1	3.4
							SICL	1	35.4	--	4	37.3	6.1
All soils	98	21.5	12.2	140	19.6	10.4	All soils	104	21.1	12.0	138	19.5	10.3
<u>Low-Topography, Wet-Season Condition</u>													
GC	--	--	--	1	12.6	--	LS	28	15.5	5.7	37	14.6	4.7
SM	58	15.5	6.5	90	15.6	6.1	GSCL	--	--	--	2	15.4	4.0
CL-ML	11	19.9	3.6	40	16.1	5.1	GSCL	--	--	--	1	15.7	--
SM-SC	7	17.5	10.2	20	16.2	4.4	GSL	2	16.9	2.1	4	16.1	4.2
SP-SM	1	18.5	--	9	16.4	7.3	GL	--	--	--	1	17.5	--
SC	10	17.1	5.9	34	18.5	9.9	GCL	1	17.4	--	4	18.0	8.4
ML	52	22.2	10.0	49	18.5	6.9	S	4	15.5	11.8	14	18.3	7.3
CL	81	23.4	7.0	231	22.5	7.3	SL	83	18.0	8.5	139	18.3	12.0
CH	50	36.6	10.8	113	35.5	15.8	SCL	3	25.2	16.3	34	18.5	4.5
MH	26	46.0	20.4	34	45.8	20.5	L	56	25.9	16.2	118	22.7	12.5
OH	8	66.2	20.1	6	93.4	11.9	SIL	79	28.5	12.7	93	27.1	12.8
							CL	14	31.6	15.3	51	27.5	19.6
							C	22	39.0	13.4	39	32.6	7.9
							S1	4	23.8	8.0	2	33.5	12.6
							SICL	32	31.7	10.6	50	34.9	17.7
							SIC	19	48.7	18.2	35	42.5	19.4
All soils	304	26.5	15.2	627	24.5	15.0	All soils	347	26.4	14.8	624	24.6	15.0
<u>Low-Topography, High-Moisture Condition</u>													
CL-ML	7	21.2	4.6	16	17.9	4.7	LS	8	18.3	6.9	12	18.3	5.1
SM	16	16.6	6.1	30	18.0	5.5	SCL	--	--	--	15	18.3	5.0
SM-SC	1	16.6	--	4	20.0	5.0	GCL	1	17.4	--	--	--	--
SC	2	20.0	7.0	12	20.7	3.8	GSL	--	--	--	1	20.4	--
ML	25	24.2	7.7	17	22.0	8.3	SL	25	19.9	5.3	41	22.6	16.9
SP-SM	1	16.8	--	2	24.6	2.3	S1	1	17.7	--	--	--	--
CL	35	26.4	5.5	93	24.8	7.0	S	3	17.0	13.4	6	23.1	5.9
CH	18	44.3	12.8	44	39.6	15.7	L	30	24.4	6.0	53	24.3	11.7
MH	13	46.9	19.9	14	52.7	27.3	SIL	18	27.9	7.9	21	26.0	9.0
OH	4	69.6	12.9	4	92.3	14.9	CL	12	33.2	13.7	22	28.4	12.5
							C	14	41.3	15.4	16	34.0	7.1
							SICL	12	38.1	13.4	26	39.4	21.7
							SIC	16	52.7	18.1	23	49.0	21.8
All soils	122	30.3	15.7	236	28.5	16.8	All soils	140	30.3	15.1	236	28.5	16.8

Note: n = number of samples; \bar{x} = mean or average; s = one standard deviation.

Table 6

Mean and Standard Deviation Values for USCS and USDA Soil Types
Dry Density, lb per cu ft, 6- to 12-in. Layer

USCS				USDA			
Type	n	\bar{x}	s	Type	n	\bar{x}	s
<u>High-Topography, Wet-Season Condition</u>							
SM-SC	5	112.2	8.2	GSL	3	109.5	13.2
GC	1	104.8	--	GL	1	104.8	--
ML	3	102.0	2.7	SL	27	102.7	5.8
CL-ML	8	101.3	5.8	S	5	96.1	8.8
SM	37	98.3	6.5	L	14	98.7	5.0
CL	13	96.6	6.7	SCL	8	95.3	11.5
SC	9	95.8	11.1	GCL	1	94.6	--
GM	1	94.6	--	LS	14	94.4	3.0
CH	5	82.4	6.6	SIL	1	91.8	--
MH	7	75.1	10.9	C	2	85.6	2.0
				SiCL	4	79.1	10.7
				CL	6	78.9	12.1
				SIC	2	75.5	1.7
All soils	89	96.2	10.9	All soils	88	96.0	10.6
<u>Low-Topography, Wet-Season Condition</u>							
SM-SC	12	101.9	5.1	GSiCL	1	117.3	--
SC	13	100.3	7.5	GCL	1	110.4	--
SM	48	99.5	7.7	GSCL	1	107.9	--
CL-ML	23	99.4	8.4	GSL	2	103.4	13.5
ML	29	97.7	7.9	SCL	23	100.5	7.2
CL	135	97.1	8.2	SL	72	99.9	7.6
SP-SM	6	92.0	5.7	LS	22	98.9	5.0
CH	54	80.5	10.3	L	73	97.3	10.4
MH	8	69.9	10.5	CL	26	96.5	6.5
OH	4	47.7	4.7	SIL	22	94.2	7.9
				S	10	90.9	5.4
				SiCL	21	85.4	15.4
				C	25	79.6	7.5
				SIC	32	77.4	14.2
All soils	332	93.9	12.4	All soils	331	93.9	12.4

Note: n = number of samples; \bar{x} = mean or average; s = one standard deviation.

Table 7
Mean and Standard Deviation Values for USCS and USDA Soil Types
Specific Gravity, 6- to 12-in. Layer

USCS				USDA			
Type	n	\bar{x}	s	Type	n	\bar{x}	s
<u>High-Topography, Wet-Season Condition</u>							
GM	2	3.10	0.28	GL	5	2.97	0.28
GC	1	2.96	--	GSCL	2	2.91	0.37
MH	12	2.77	0.11	GSL	8	2.90	0.30
SC	15	2.77	0.24	GCL	2	2.81	0.15
SM-SC	12	2.71	0.20	SiCL	2	2.77	0.11
CH	12	2.69	0.06	CL	7	2.75	0.11
CL	18	2.68	0.03	L	19	2.69	0.06
SM	40	2.65	0.10	GSiL	1	2.68	--
ML	7	2.64	0.02	SiC	2	2.68	0.02
CL-ML	3	2.64	0.02	SiL	5	2.67	0.08
				SL	39	2.65	0.07
				C	6	2.65	0.05
				S	1	2.64	--
				LS	18	2.63	0.02
				SCL	5	2.63	0.03
All soils	122	2.70	0.14	All soils	122	2.70	0.14
<u>Low-Topography, Wet-Season Condition</u>							
CH	86	2.68	0.07	GSiCL	1	3.00	--
SC	20	2.67	0.11	GL	2	2.98	0.23
MH	34	2.66	0.08	GSL	5	2.79	0.11
CL	128	2.66	0.06	GCL	3	2.76	0.05
CL-ML	24	2.65	0.04	GSCL	1	2.73	--
SM	65	2.65	0.07	Si	2	2.71	0.03
SP-SM	4	2.65	0.06	SiC	25	2.71	0.04
SM-SC	8	2.65	0.05	CL	26	2.68	0.05
ML	33	2.64	0.05	C	26	2.67	0.07
OH	6	2.61	0.18	SCL	13	2.65	0.03
				SiCL	36	2.65	0.08
				SiL	79	2.65	0.07
				L	65	2.65	0.07
				S	8	2.64	0.05
				LS	28	2.64	0.02
				SL	87	2.64	0.04
All soils	408	2.66	0.07	All soils	407	2.66	0.07

Note: n = number of samples; \bar{x} = mean or average; s = one standard deviation.

Table 8
Soil Trafficability Classification in USCS Terms

Soil Type Symbol	Strength Measurements					Vehicle Category						
	Mean		Surface Shear Strength*			Range RCI**	Vehicle Cone Index					
	CT	RI	S/R	S/S	RCI†		1	2	3	4	5	7
GW, GP SW, SP	--	--	--	--	--	--	20	40	60	80	100	120
SP-SM	--	--	--	--	--	195-205†						
GM	462††	0.51††	--	--	89††	81-274†						
SM	269	1.32	5.24	7.61	227	61-300+						
SM-SC	378	0.98††	--	--	170††	100-198†						
GC	617††	0.45††	--	--	253††	90-234†						
SC	286	0.94	5.90	7.20	221	80-300+						
CH	205	1.04	4.30	8.40	169	71-278						
MH	179	1.02	6.43	8.88	148	54-291						
CL-ML	135	0.83	6.70	8.13	118	57-243						
CL	258	0.82	7.45	8.88	150	56-300+						
ML	304	0.69	6.00	8.33	104	50-293†						

High-Topography, Wet-Season Condition

Low-Topography, Wet-Season Condition

Soil Type Symbol	Mean CT	Mean RI	Mean S/R	Mean S/S	Range RCI†
GW, GP SW, SP	--	--	--	--	--
SP-SM	193	1.31	5.70	7.10	234
GM	--	--	--	--	46-300†
SM	282	0.89	5.25	7.23	197
GC	430††	--	--	--	42-269†
SC	264	0.77	5.83	7.27	144
CL-ML	313	0.57	5.34	6.76	108
CL	209	0.71	6.24	7.77	102
CH	134	0.88	5.73	8.07	108
MH	125	0.79	5.31	6.02	90
SM-SC	250	0.51	5.16	7.46	85
ML	303	0.54	5.26	7.06	131
OL	--	--	--	--	14-50†
OH	31	0.62	--	--	22
					11-46

Low-Topography, High-Moisture Condition

Soil Type Symbol	Mean CT	Mean RI	Mean S/R	Mean S/S	Range RCI†
GW, GP SW, SP	--	--	--	--	--
SP-SM	100††	1.22††	--	--	132††
GC	--	--	--	--	40-269†
SC	167	0.64	--	--	113
GM	--	--	--	--	26-217†
SM	201	0.73	4.90	6.68	160
SM-SC	249††	0.34††	--	--	47††
CL	127	0.65	5.68	6.67	79
ML	257	0.43	4.35	4.84	100
CL-ML	266	0.42	5.57	7.00	65
MH	116	0.66	--	3.80	67
CH	94	0.79	6.43	8.85	70
OL	--	--	--	--	10-46†
OH	35††	0.65††	--	--	24††
					8-40†

Note: Vehicle category and cone index range are given in paragraph 52.

* Sheargraph soil-to-rubber (S/R) and soil-to-soil (S/S) strength in psi for a normal load of 10 psi.

** Excluding lowest 10% and highest 10% of all RCI values.

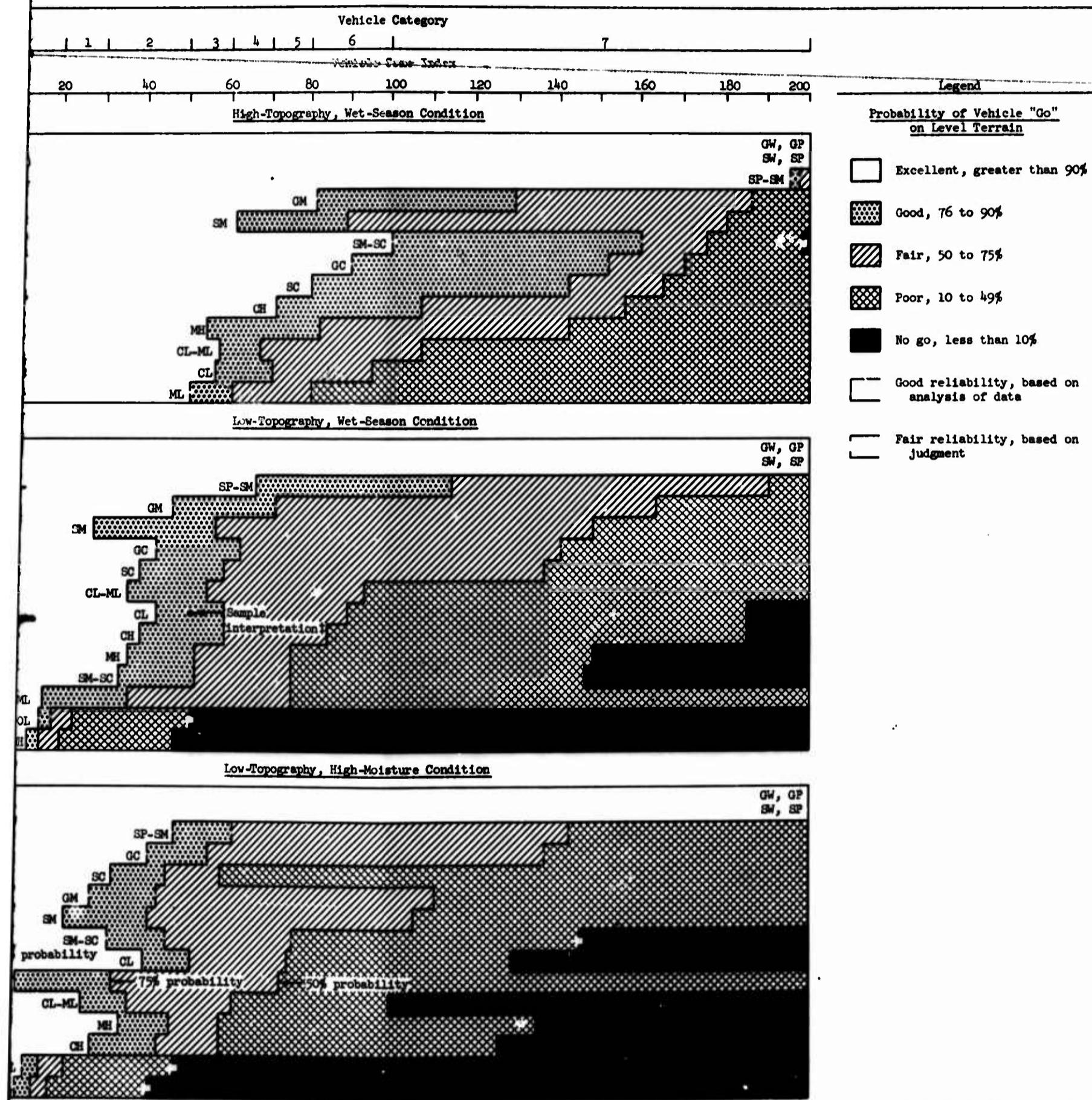
† Estimated from textural, plasticity, and organic properties of soil under given moisture condition.

† Based on analysis of less than five samples.

‡ A vehicle with a vehicle cone index of 50 would have a 75-90% chance of "go" on a CL soil of low-topography, wet-season condition.

1

Table 8
Soil Trafficability Classification in USCS Terms



paragraph 52.
/S) strength in psi for a normal load of 10 psi.

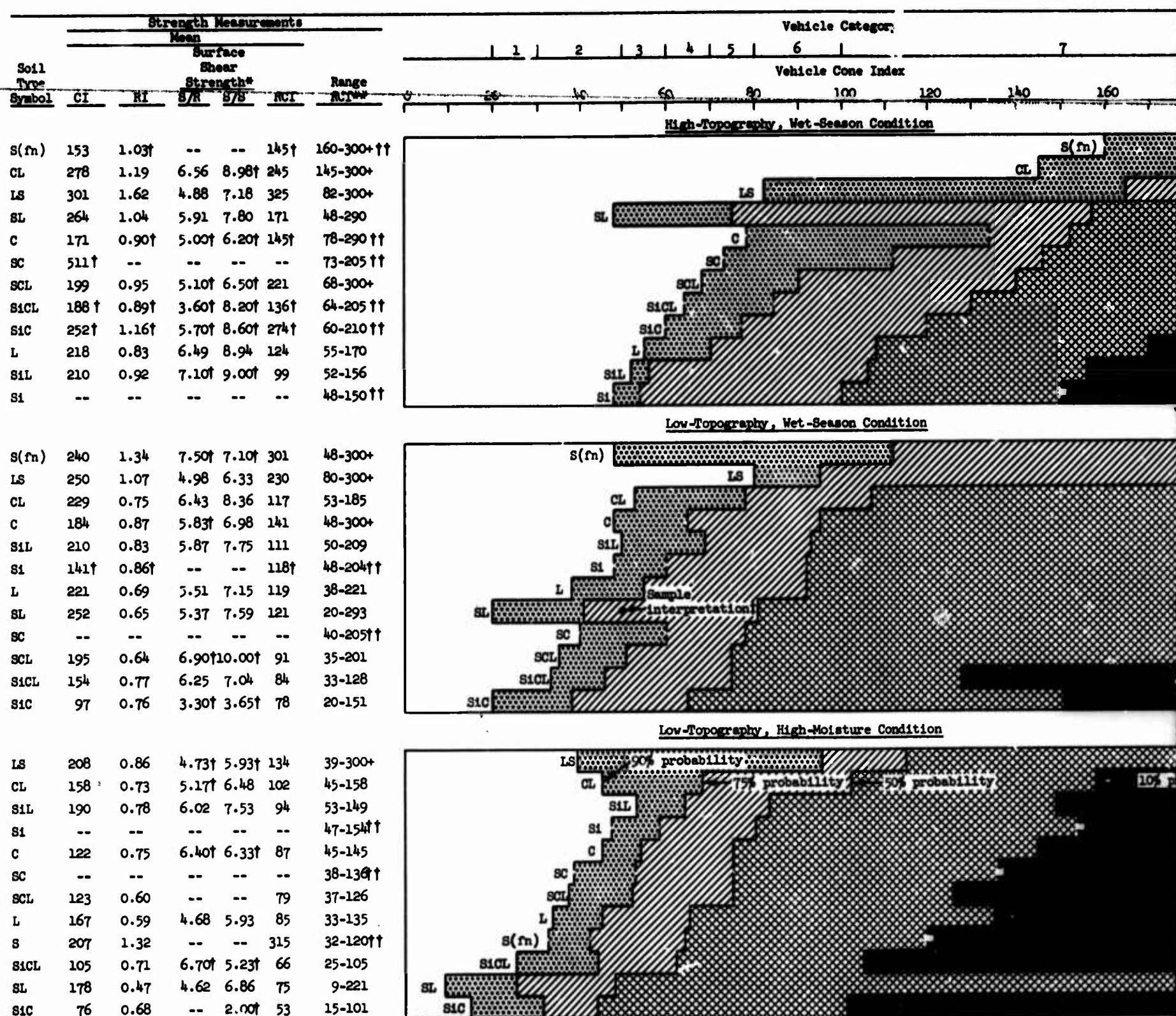
des.

roperties of soil under given moisture condition.

a 75-90% chance of "go" on a CL soil of low-topography, wet-season condition.

2

Table 9
Soil Trafficability Classification in USDA Terms



Note: Vehicle category and cone index range are given in paragraph 52.

* Sheargraph soil-to-rubber (S/R) and soil-to-soil (S/S) strength in psi for a normal load of 10 psi.

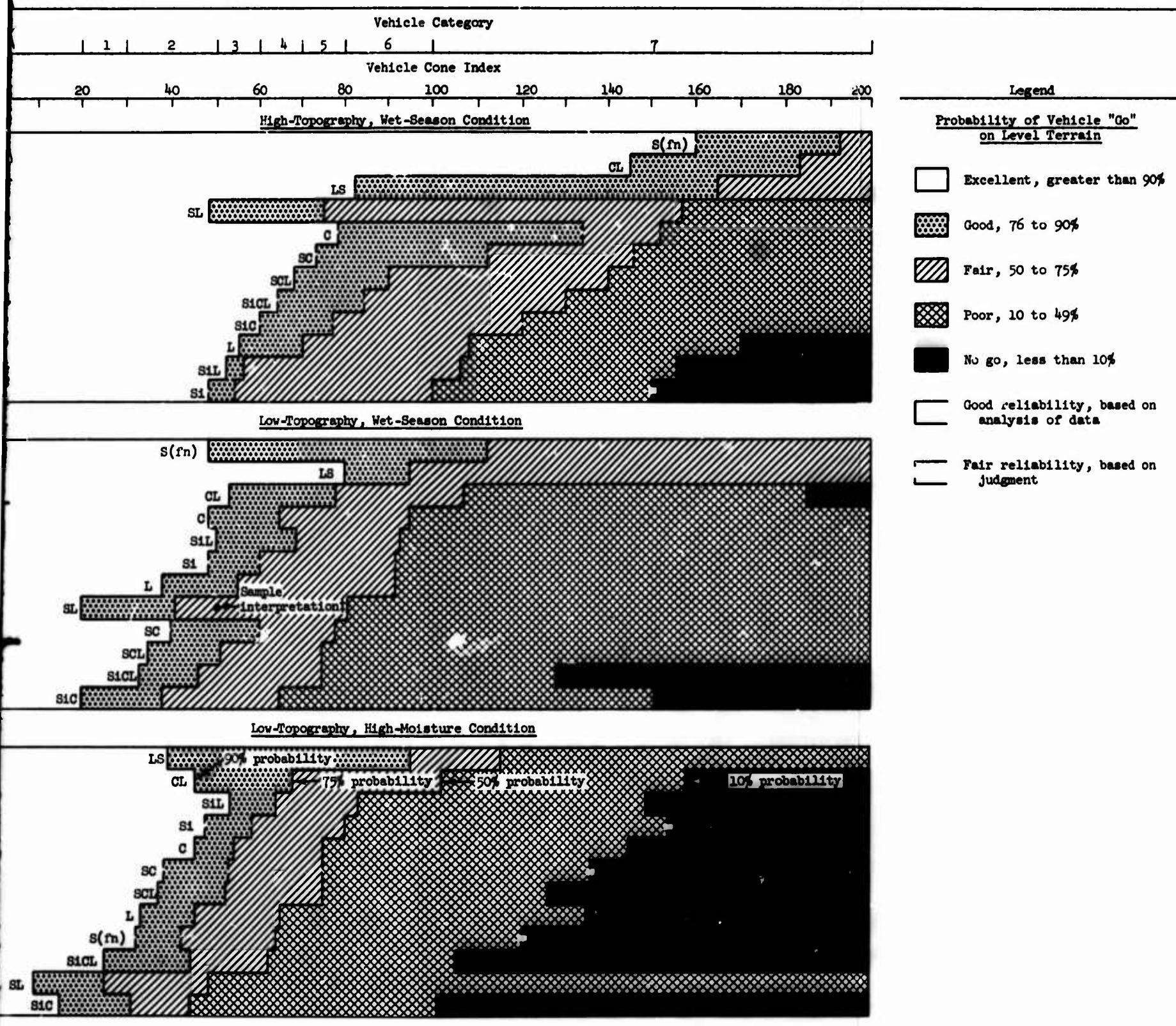
** Excluding lowest 10% and highest 10% of all RCI values.

† Based on analysis of less than five samples.

†† Estimated from textural, plasticity, and organic properties of soil under given moisture condition.

† A vehicle with a vehicle cone index of 50 would have a 50-75% chance of "go" on an SL soil of low-topography, wet-season condition.

Table 9
Soil Trafficability Classification in USDA Terms



in paragraph 52.
1 (S/B) strength in psi for a normal load of 10 psi.
values.

properties of soil under given moisture condition.
have a 50-75% chance of "go" on an SL soil of low-topography, wet-season condition.

Table 10

Percent Probability of "Go" for Tracked and Wheeled Vehicles on Level and Slopes

Soil Type Symbol	No. of Samples	Vehicle Category 1* VCI Range 20-29								Vehicle Category 2 VCI Range 30-49								Vehicle Category 3 VCI Range 50-59								Vehicle Category 4** VCI Range 60-69								
		Tracked				Wheeled				Tracked				Wheeled				Tracked				Wheeled				Tracked				Wheeled				
		0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	
. High-Topography, Wet-Season Condition																																		
GW, GP SW, SP	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
SP-SM†	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
GM†	1	100	100	100	99	100	100	100	95	100	100	98	94	100	100	96	90	98	96	93	90	98	95	92	86	95	93	90	86	95	92	86	92	86
SM	32	97	96	95	93	97	96	94	88	95	94	92	86	95	94	90††	78	92	89	84	78	92	88	81	73	88	83	78	74	88	82	71	87	82
SM-SC†	4	100	100	100	100	100	100	100	100	100	100	100	98	100	100	100	95	100	99	97	94	100	99	96	91	99	97	95	92	99	96	95		
GC†	1	100	100	100	99	100	100	100	96	100	100	99	96	100	100	97	93	99	97	95	92	99	96	94	89	96	94	93	90	96	94	95		
SC	10	100	100	100	97	100	100	100	90	100	100	94	90	100	100	90	90	94	90	90	90	90	90	90	90	90	90	90	90	90	90	90		
CH	11	100	100	100	98	100	100	100	91	100	100	95	91	100	100	91	82	95	91	82	95	91	86	82	91	89	82	82	91	87	81			
MH	9	100	100	100	95	100	100	100	78	100	100	88	78	100	100	78	78	88	78	78	75	88	78	78	66	78	78	78	78	78	78	78		
CL-ML	7	100	100	100	96	100	100	100	86	100	100	92	86	100	100	86	71	92	86	86	71	92	86	73	71	86	82	71	71	86	79			
CL	16	100	100	100	92	100	100	97	82	100	95	91	80	100	94	88	63	91	86	76	61	91	83	69	50	82	74	63	54	82	71			
ML†	7	100	100	100	87	100	100	99	68	100	95	83	65	100	92	75	50	83	72	61	48	83	69	55	40	68	59	50	42	68	56			
. Low-Topography, Wet-Season Condition																																		
GW, GP SW, SP	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
SP-SM	6	100	100	100	100	100	100	100	91	100	100	88	100	100	100	100	83	100	98	83	83	100	93	83	91	83	83	91	83	83	83	83	83	83
GM†	0	100	99	94	86	100	98	91	78	94	90	85	77	94	88	82	72	85	80	75	72	85	79	74	69	78	75	72	69	78	74	71		
SM	55	91	87	80	76	91	85	78	72	80	77	75	71	80	76	74	71	75	73	71	70	75	73	71	66	72	71	71	68	72	71	71		
GC†	0	100	98	91	82	100	96	88	74	91	86	80	73	91	85	76	69	80	75	72	69	80	74	71	65	74	72	69	66	74	71			
SC	23	100	97	87	78	100	94	83	72	87	82	77	71	87	80	74	69	77	73	69	68	77	72	69	61	72	69	61	72	69	61			
CL-ML	24	96	91	87	76	96	90	82	73	87	79	74	73	87	77	73	69	74	73	73	66	74	73	71	48	73	72	69	51	73	71			
CL	187	98	96	92	80	98	95	87	70	92	85	77	69	92	83	73	57	77	72	67	55	77	71	62	45	70	65	57	48	70	63			
MH	33	95	92	88	73	95	91	83	57	88	81	68	56	88	79	60	45	68	59	54	44	68	58	50	34	57	52	45	37	57	51			
SM-SC	13	92	91	85	74	92	89	81	54	85	79	65	54	85	78	54	46	65	54	54	45	65	54	50	38	54	52	46	38	54	51			
ML	36	84	79	69	65	84	77	68	57	69	68	62	56	69	67	58	47	62	58	55	46	62	57	50	43	57	53	47	44	57	51			
OL†	0	45	34	23	6	45	32	12	0	23	14	2																						

Table 10

Selected Vehicles on Level and Sloping Terrain Classified in USCS Terms

Vehicle Category 4*						Vehicle Category 5						Vehicle Category 6						Vehicle Category 7**					
Tracked % Slope			Wheeled % Slope			Tracked % Slope			Wheeled % Slope			Tracked % Slope			Wheeled % Slope			Tracked % Slope			Wheeled % Slope		
0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45

Topography, Wet-Season Condition

00	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
00	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
95	93	90	86	95	92	89	83	92	90	87	83	92	89	86	80	87	85	83	79	87	84	81	75	84
88	83	78	74	88	82	77	72	81	78	75	72	81	77	73	68	75	73	72	68	75	72	65	72	72
99	97	95	92	99	96	94	89	96	94	92	89	96	94	91	86	92	91	89	86	92	90	88	86	83
96	94	93	90	96	94	91	86	94	92	90	87	94	92	89	84	90	88	86	83	90	88	85	83	78
90	90	90	90	90	90	85	90	90	90	88	90	90	90	80	90	90	85	80	90	90	83	80	80	80
91	89	82	82	91	87	82	77	86	82	82	79	86	82	82	72	82	77	72	82	72	64	82	75	72
78	78	78	66	78	78	72	66	78	75	66	66	78	73	66	66	66	66	66	66	55	66	66	58	66
86	82	71	71	86	79	71	55	78	71	71	64	78	71	71	27	71	71	55	22	71	71	40	14	71
82	74	63	54	82	71	60	44	69	61	56	44	69	60	50	41	56	44	39	56	46	44	38	44	38
68	59	50	42	68	56	46	36	55	48	43	37	55	47	40	33	43	39	36	32	43	38	29	38	35

Topography, Wet-Season Condition

100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
91	83	83	83	91	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	66	66
78	75	72	69	78	74	71	66	74	72	70	66	74	71	69	63	70	68	66	62	70	67	65	67	63
72	71	71	68	72	71	70	62	71	70	69	63	71	70	66	59	69	65	62	58	69	64	62	59	56
74	72	69	66	74	71	68	61	71	69	66	62	71	68	65	58	64	61	58	66	63	60	53	61	58
72	69	69	61	72	69	66	61	69	68	61	69	66	61	61	58	61	61	57	61	61	52	61	61	48
73	72	69	51	73	71	61	42	71	66	54	42	71	62	48	40	54	46	42	39	54	43	42	38	42
70	65	57	48	70	63	53	37	62	55	50	39	62	54	45	31	50	43	37	30	50	42	34	24	36
65	58	52	46	65	56	49	38	55	50	48	39	55	50	44	34	48	42	38	33	48	41	36	21	40
57	52	45	37	57	51	42	29	50	44	39	29	50	43	34	27	39	32	29	27	39	30	27	23	30
54	52	46	38	54	51	43	38	50	45	38	50	44	38	34	38	38	38	38	38	38	34	20	38	31
57	53	47	44	57	51	46	40	50	46	44	41	50	46	43	37	44	42	39	33	42	39	37	34	28
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Topography, High-Moisture Condition

100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
74	72	69	65	74	71	68	61	71	69	66	62	71	68	64	58	66	64	61	58	66	63	60	57	51
72	70	67	63	72	69	66	60	69	67	64	60	69	66	63	57	64	62							

Table 11

Soil Type Symbol	No. of Samples	Vehicle Category 1* VCI Range 20-29								Vehicle Category 2 VCI Range 30-49								Vehicle Category 3 VCI Range 50-59								Vehicle VCI Range				
		Tracked % Slope				Wheeled % Slope				Tracked % Slope				Wheeled % Slope				Tracked % Slope				Wheeled % Slope				Tracked % Slope				
		0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	
<u>High-Topography, Wet-Season</u>																														
S(r_n)†	4	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
LS	12	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	91	92	92	92	83	92	92	92	83	
SL	29	97	96	93	89	97	95	91	83	93	90	88	81	93	90	86	72	88	85	79	72	88	83	76	72	83	78	72	72	
CL	5	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
C†	3	100	100	100	97	100	100	99	93	100	98	96	93	100	98	95	90	96	94	92	89	96	94	91	86	93	92	90	87	
SCT†	0	100	100	100	98	100	100	100	93	100	100	97	92	100	99	95	87	97	94	91	86	97	93	89	81	93	90	87	82	
SCL	8	100	100	100	100	100	100	100	93	100	100	100	91	100	100	100	75	100	97	88	75	100	95	82	75	93	85	75	75	
SIC†	2	100	100	100	97	100	100	100	85	100	100	94	84	100	100	90	73	94	88	81	72	94	86	76	64	85	79	73	66	
SICL†	3	100	100	100	100	100	100	100	90	100	100	97	88	100	100	93	78	97	92	86	77	97	90	82	70	90	84	78	71	
L	23	100	100	100	93	100	100	98	79	100	97	90	77	100	96	83	70	90	82	75	69	90	80	72	61	79	74	70	65	
SIL	5	100	100	100	91	100	100	100	60	100	100	79	60	100	100	60	60	79	60	60	79	60	60	60	60	60	60	60	60	
S†	0	100	100	100	80	100	100	95	69	100	91	75	68	100	87	72	61	75	70	66	60	75	69	64	52	69	65	61	54	
<u>Low-Topography, Wet-Season</u>																														
S(r_n)	9	100	100	100	99	100	100	94	83	100	91	89	81	100	89	89	78	89	86	78	78	89	84	78	78	83	78	78	78	
LS	22	100	98	91	91	100	96	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91
CL	38	100	99	97	90	100	99	94	83	97	93	89	81	97	92	86	74	89	85	79	73	89	83	76	63	83	78	74	64	
C	32	100	99	97	87	100	98	94	75	97	91	86	70	97	90	84	60	86	81	66	59	86	77	63	50	75	65	60	53	
SIL	71	96	95	93	89	96	95	91	78	93	91	87	76	93	90	82	62	87	80††	74	60	87	79	68	49	78	72	62	53	
L	98	98	94	88	77	98	93	84	67	88	82	74	66	88	80	70	58	74	69	63	57	74	68	60	48	67	62	58	50	
SL	97	87	83	76	65	87	82	72	56	76	70	62	55	76	68	58	50	62	57	53	49	62	56	52	43	56	53	50	44	
SICL	46	94	90	87	66	94	89	78	57	87	75	64	56	87	71	61	41	64	59	54	40	64	58	48	35	57	51	41	36	
SCT†	0	100	95	90	81	100	94	86	70	90	85	79	67	90	83	75	50	79	74	62	49	79	71	56	45	70	60	50	44	
SCL	26	100	96	84	73	100	93	80	61	84	78	70	59	84	77	65	39	70	64	58	38	70	63	47	29	61	54	39	33	
SIC	39	87	82	74	59	87	80	67	50	74	65	57	49	74	63	51	36	57	51	49	35	57	50	41	30	50	45	36	34	
S†	1	100	100	100	85	100	100	94	71	100	91	81	70	100	88	75	59	81	74	67	58	81	72	63	49	71	65	59	54	
<u>Low-Topography, High-Moisture</u>																														
LS	9	100	97	89	89	100	95	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	
CL	21	100	99	95	86	100	98	90	78	95	89	86	76	95	87	86	62	86	84	72	62	86	80	67	57	78	70	62	60	
SIL	21	97	95	95	92	97	95	95	73	95	95	89	70	95	95	80	57	89	78	66	52	89	75	62	30	73	64	57	33	
SIT†	0	100	100	100	82	100	100	91	67	100	90	79	65	100	86	72	50	79	70	61	49	79	68	56	42	67	59	50	44	
C	15	100	100	100	77	100	100	89	60	100	85	73	58	100	82	67	46	73	64	53	45	73	62	50	37	60	52	46	33	
SCT†	0	100	97	88	76	100	95	84	61	88	82	73	59	88	80	67	47	73	65	56	45	73	63	50	37	61	53	47	33	
SCL	15	100	97	87	76	100	95	83	60	87	82	68	60	87	81	60	33	68	60	60	32	68	60	46	21	60	56	33	22	
L	50	95	91	84	65	95	89	77	51	84	72	61	49	84	70	55	40	61	53	46	36	61	51	43	23	51	44	40	23	
S†	5	100	100	100	80	100	100	90	68	100	86	80	64	100	83	80	60	80	74	60	60	80	71	60	60	63	60	60	60	
SICL	29	90	86	83	60	90	85	72	47	83	68	57	45	83	64	52	28	57	50	42	25	57	48	35	14	47	39	28	1	
SL	38	77	67	60	44	77	65	54	30	60	51	40	30	60	49	32	26	40	31	29	26	40	30	28	24	30	28	26	2	
SIC	27	81	74	50	35	81	70	48	30	59	43	33	30	59	39	30	15	33	30	30	15	33	30	22	13	30	27	15	1	

* Probability of "go" based on median vehicle cone index within vehicle categories 1-6 and minimum vehicle cone index for category 7.

Probability of "go" for vehicles in category 7 equal to or less than given value.

t Soils with estimated probabilities.

++ Sample interpretation: A tracked vehicle with a vehicle cone index in the range 50-59 has an 80% probability of "go" on an SiL soil at 15% slope and

e 11

es on Level and Sloping Terrain Classified in USDA Terms

Vehicle Category 4 VCI Range 60-69					Vehicle Category 5 VCI Range 70-79					Vehicle Category 6 VCI Range 80-99					Vehicle Category 7** VCI Range 100 or Greater								
Wheeled		Tracked			Wheeled		Tracked			Wheeled		Tracked			Wheeled		Tracked						
0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45
30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45	0	15	30	45		

t-Season Condition

00	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	99					
92	83	92	92	88	83	92	91	83	83	92	88	83	83	83	83	83	83	83	83	83	83	83	83					
72	72	83	77	72	72	76	72	72	76	72	72	69	72	72	68	72	72	72	66	72	69	66	72	62				
00	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100					
90	87	93	91	88	83	91	89	87	84	91	88	86	80	87	85	83	80	87	84	82	76	84	82	79	67			
87	82	93	89	85	78	89	86	83	79	89	85	81	73	83	81	78	71	83	80	76	62	80	77	64	54			
75	75	93	83	75	64	82	75	75	70	82	75	75	50	75	75	64	50	75	75	50	50	50	75	54	50			
73	66	85	77	70	59	76	72	67	60	76	71	64	53	67	63	59	52	67	62	56	46	61	57	53	41			
78	71	90	83	75	64	82	77	72	65	82	75	69	58	72	68	64	57	72	67	61	50	67	63	58	45			
70	63	79	73	67	53	72	69	65	55	72	68	61	42	65	59	53	39	65	58	48	31	57	51	42	32	26		
60	60	60	60	51	60	60	60	56	60	60	60	40	60	60	51	40	60	60	40	20	60	48	40	26	60	43	20	
61	54	69	64	58	46	64	60	55	48	64	59	52	38	55	51	46	36	55	50	42	26	50	44	38	28	50	42	18

Wet-Season Condition

78	78	83	78	78	78	78	78	78	78	78	78	72	78	78	78	78	78	78	72	67	78	79	67	67					
91	79	91	91	86	73	91	89	82	73	91	88	75	70	82	73	73	69	82	73	73	73	70	68	73	68	68			
74	66	83	77	71	53	76	73	68	55	76	72	63	43	68	60	53	41	68	59	48	34	58	50	43	36	58	48	24	
53	53	75	64	58	42	63	59	56	43	63	58	50	40	56	47	42	40	56	45	40	31	44	41	40	34	44	40	28	
62	51	78	70	56	42	68	60	52	45	68	58	49	37	52	48	42	37	52	47	39	27	46	41	37	29	46	40	25	
58	50	67	61	55	42	60	57	52	43	60	56	48	39	52	46	42	38	52	45	41	30	44	42	39	32	44	41	25	
50	44	56	52	47	41	52	49	44	42	52	48	43	38	44	43	41	37	44	42	40	32	42	40	38	33	42	40	30	
41	36	57	50	39	29	48	40	37	31	48	39	35	23	37	34	29	21	37	33	26	9	32	28	23	11	32	26	19	9
50	46	70	57	48	42	56	49	47	43	56	48	45	39	47	44	42	38	47	44	40	34	43	41	39	35	43	40	37	31
39	32	61	50	36	23	47	38	34	23	47	37	29	23	34	26	23	23	34	24	23	23	23	23	23	23	23	23	23	
36	32	50	42	34	21	41	35	33	24	41	35	30	18	33	28	21	18	33	26	18	15	25	19	18	16	25	18	18	13
59	50	71	64	55	45	63	58	51	46	63	56	49	42	51	48	45	41	51	48	44	37	47	45	42	38	47	44	40	33

Moisture Condition

89	84	89	89	89	60	89	89	89	63	89	89	79	50	89	72	60	47	89	69	55	44	67	58	50	44	67	56	44	
62	60	78	68	62	43	67	62	62	49	67	62	57	31	62	55	43	30	62	54	33	19	52	39	31	22	52	35	28	14
57	34	73	62	46	24	62	52	37	24</td																				

CHART FOR DETERMINING
SLOPE INDEX

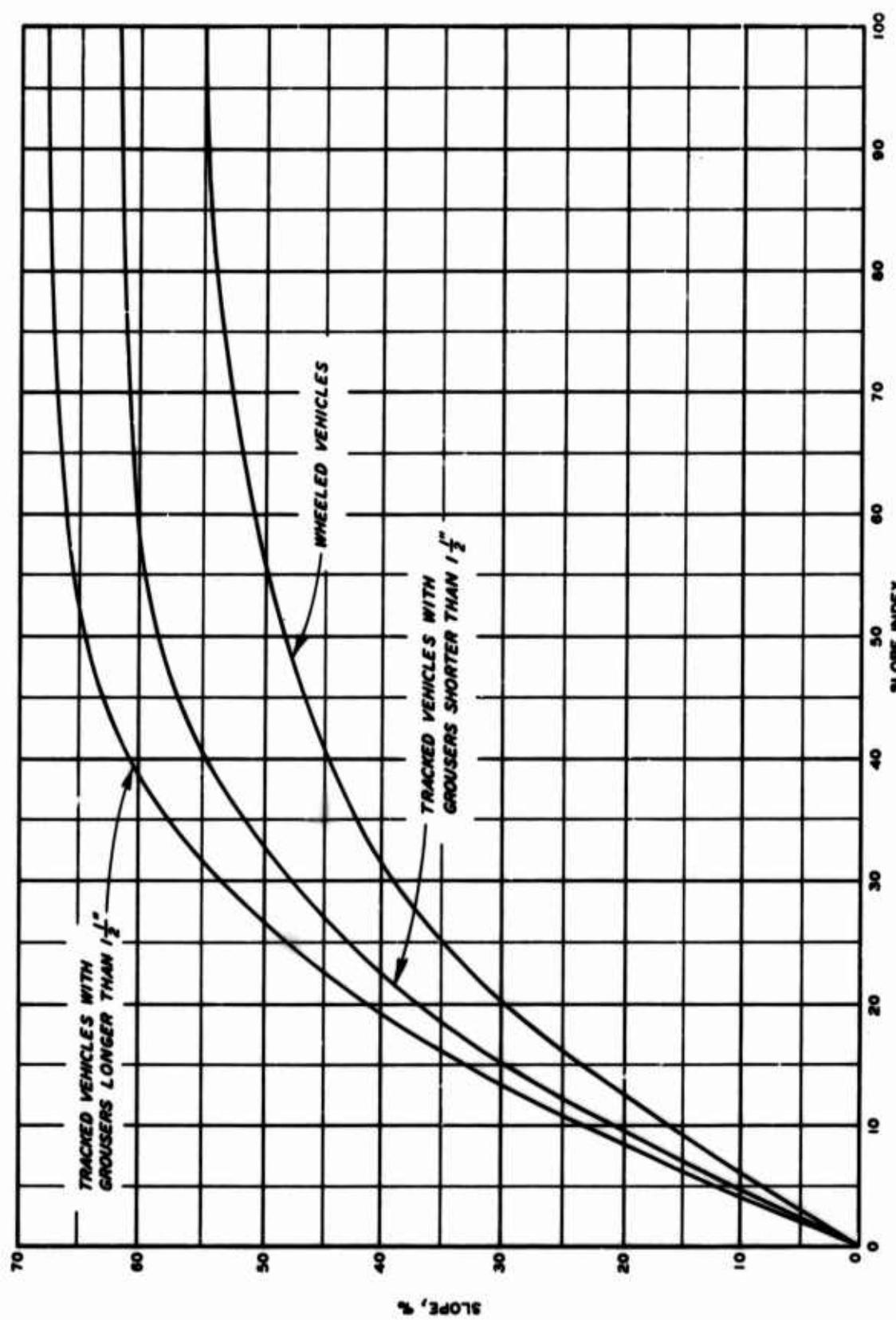


PLATE I

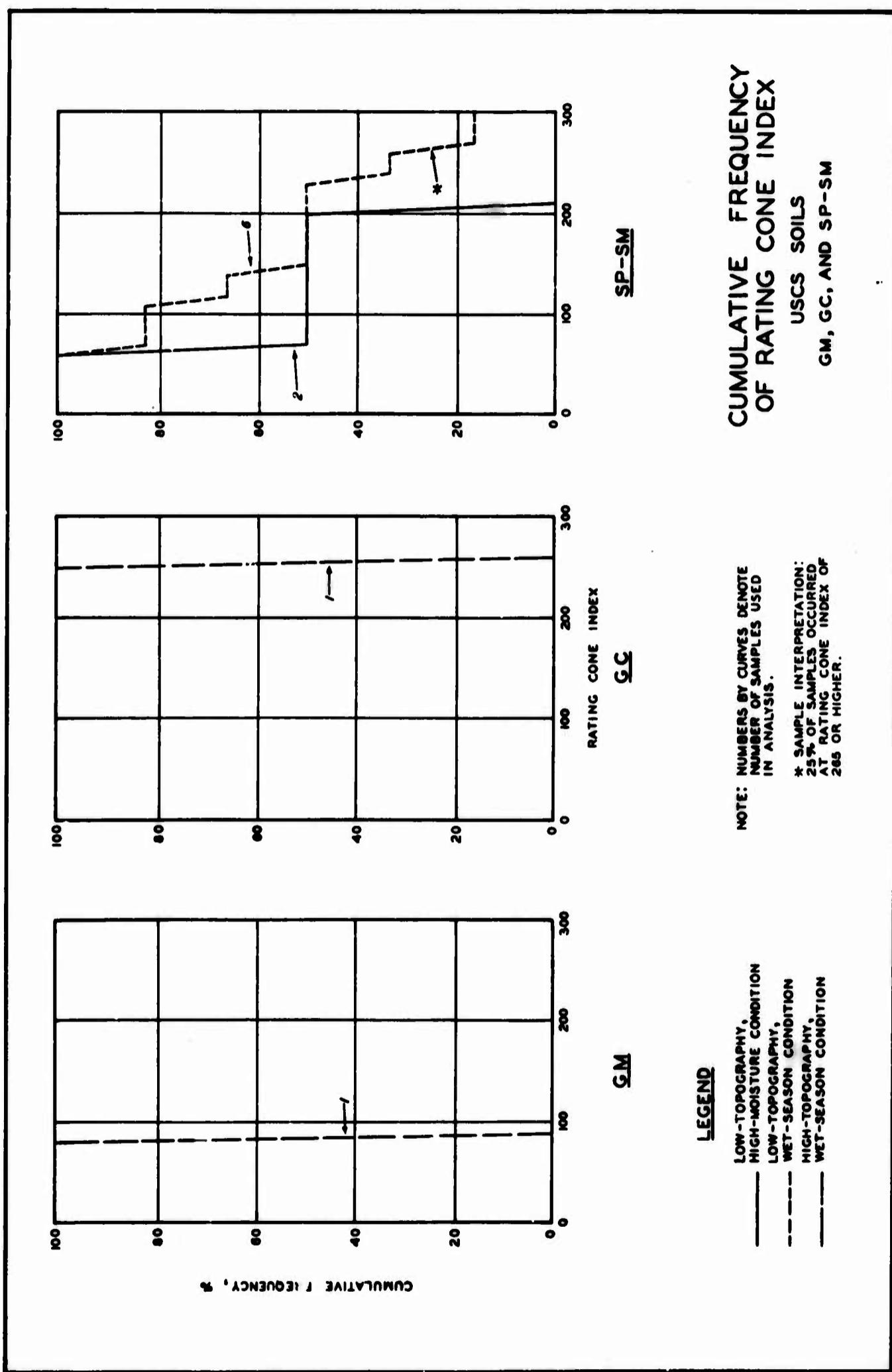


PLATE 2

CUMULATIVE FREQUENCY
OF RATING CONE INDEX

USCS SOILS
SC, SM-SC, AND SM

NOTE: NUMBERS BY CURVES DENOTE
NUMBER OF SAMPLES USED
IN ANALYSIS.

LEGEND

—	LOW-TOPOGRAPHY, HIGH-MOISTURE CONDITION
- - -	LOW-TOPOGRAPHY, WET-SEASON CONDITION
—	HIGH-TOPOGRAPHY, WET-SEASON CONDITION

CUMULATIVE FREQUENCY, %

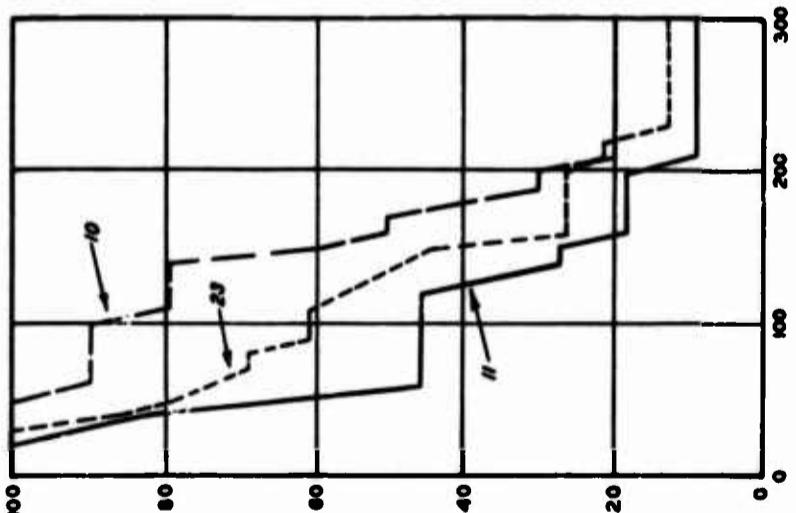
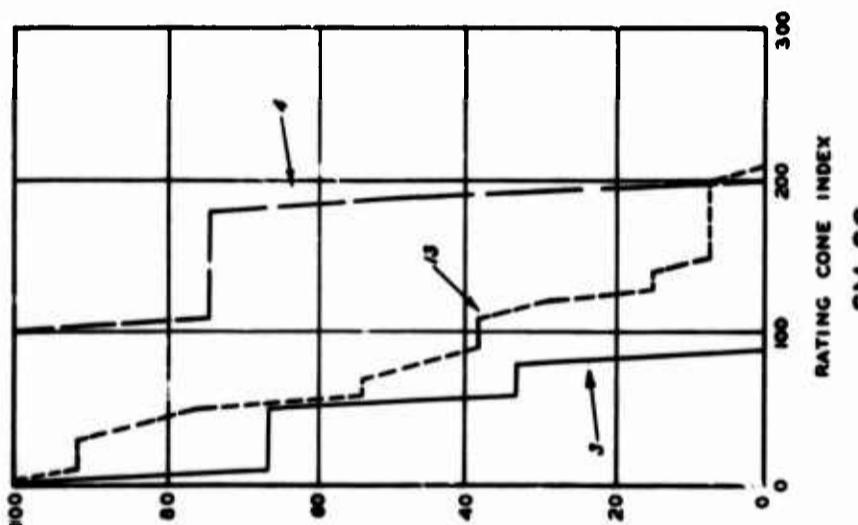
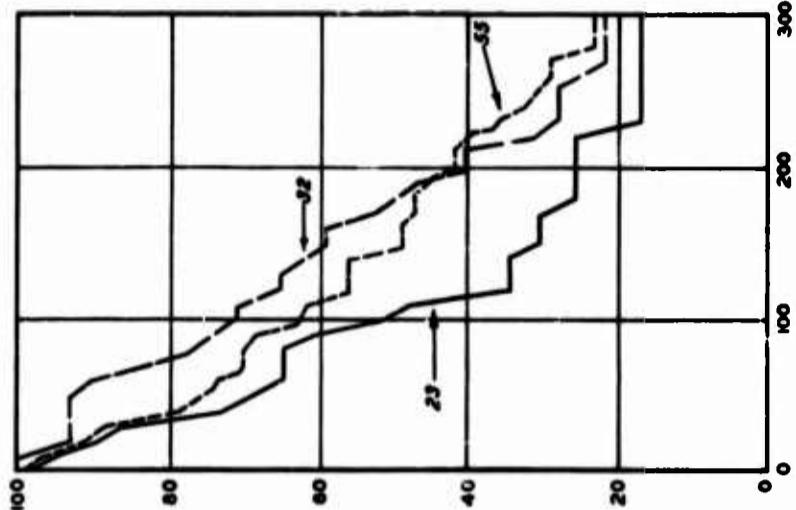


PLATE 3

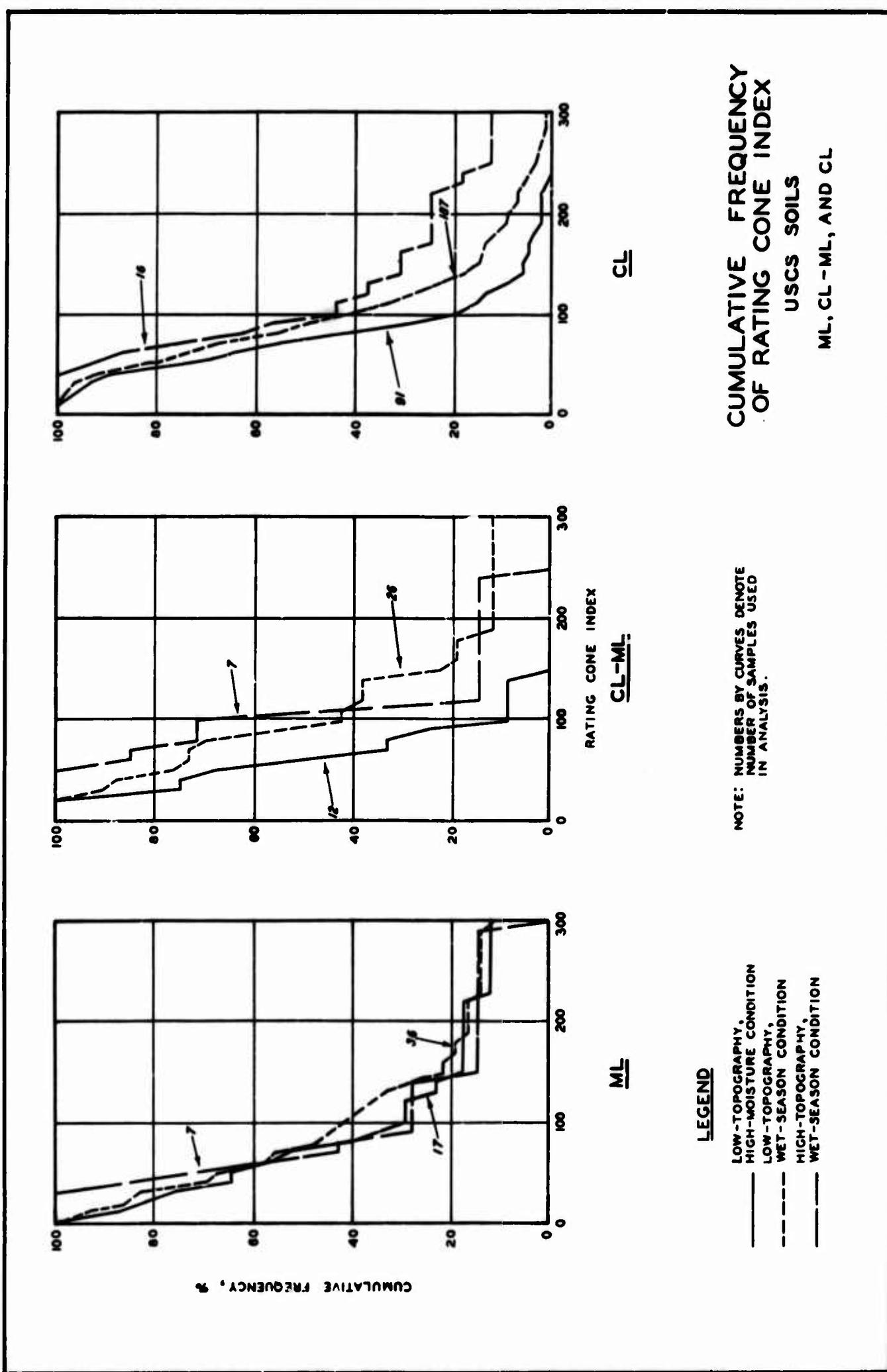


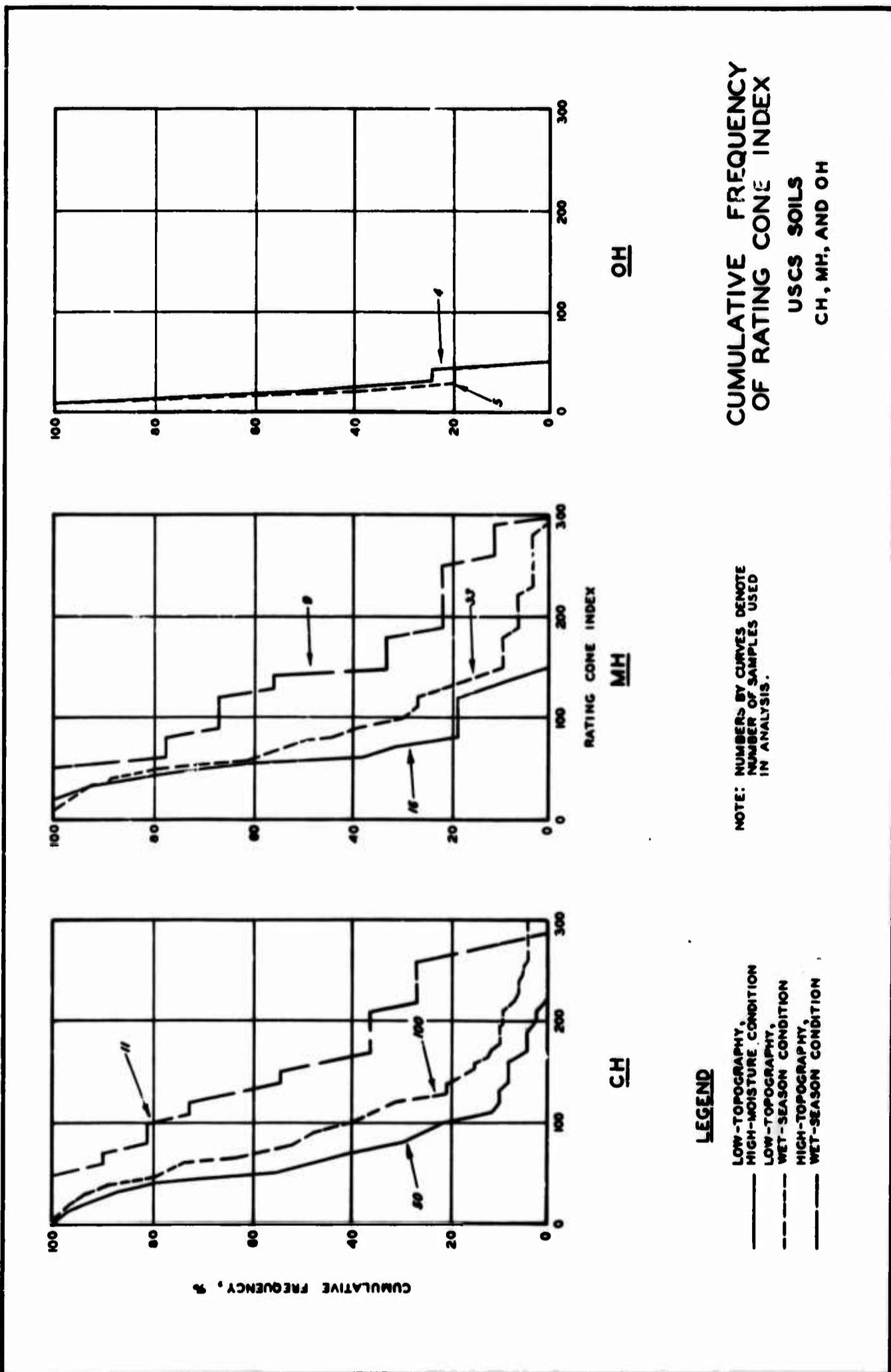
PLATE 4

CUMULATIVE FREQUENCY
OF RATING CONE INDEX
USCS SOILS
CH, MH, AND OH

NOTE: NUMBERS BY CURVES DENOTE NUMBER OF SAMPLES USED IN ANALYSIS.

LEGEND
 LOW-TOPOGRAPHY, HIGH-MOISTURE CONDITION
 - - - LOW-TOPOGRAPHY, WET-SEASON CONDITION
 - - - HIGH-TOPOGRAPHY, WET-SEASON CONDITION

CUMULATIVE FREQUENCY, %



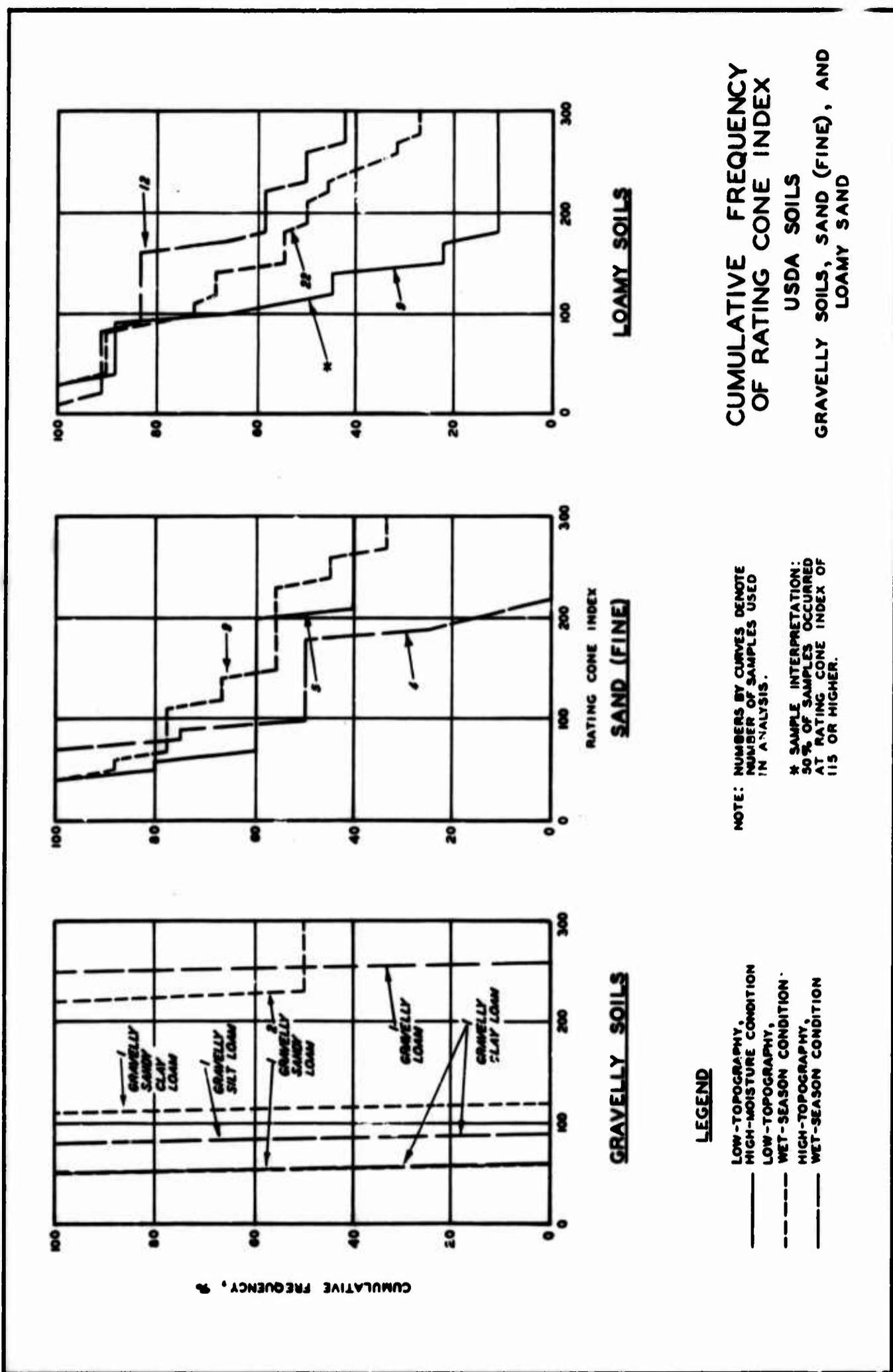
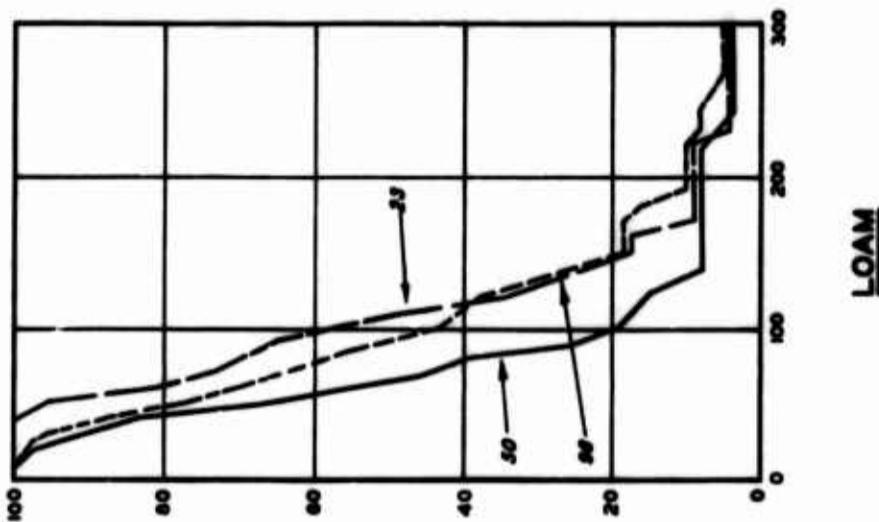


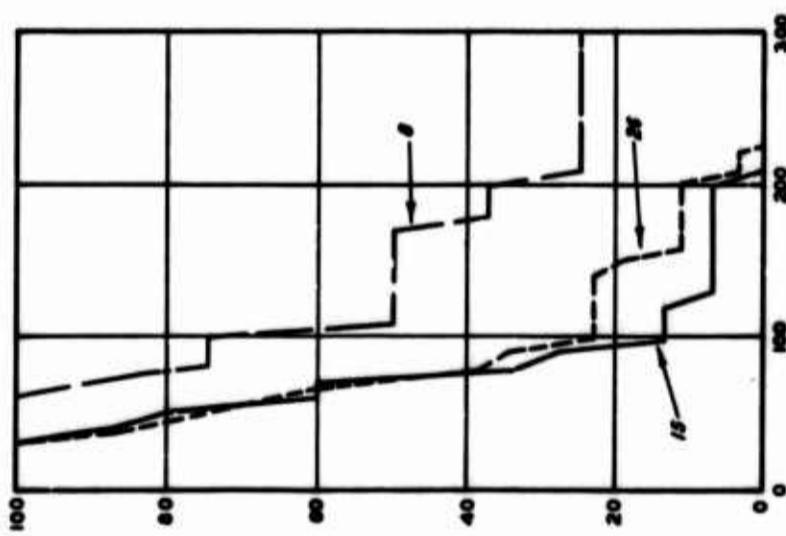
PLATE 6

CUMULATIVE FREQUENCY
OF RATING CONE INDEX
USDA SOILS
SANDY LOAM, SANDY CLAY LOAM,
AND LOAM



NOTE: NUMBERS BY CURVES DENOTE NUMBER OF SAMPLES USED IN ANALYSIS.

RATING CONE INDEX
SANDY CLAY LOAM



LEGEND

- LOW-TOPOGRAPHY, HIGH-MOISTURE CONDITION
- LOW-TOPOGRAPHY, WET-SEASON CONDITION
- HIGH-TOPOGRAPHY, WET-SEASON CONDITION

CUMULATIVE FREQUENCY, %

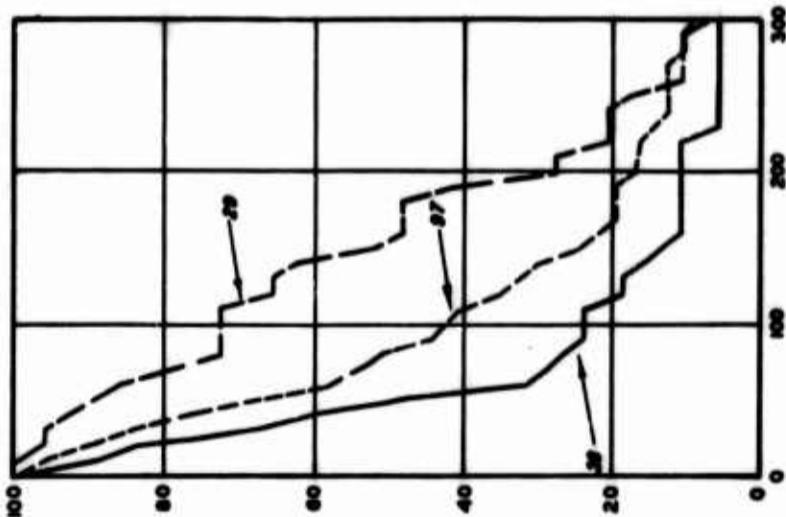


PLATE 7

**CUMULATIVE FREQUENCY
OF RATING CONE INDEX**

USDA SOILS
**CLAY LOAM, SILT LOAM,
AND SILT**

NOTE: NUMBERS BY CURVES DENOTE
NUMBER OF SAMPLES USED
IN ANALYSIS.

LEGEND

- LOW-TOPOGRAPHY,
HIGH-MOISTURE CONDITION
- LOW-TOPOGRAPHY,
WET-SEASON CONDITION
- HIGH-TOPOGRAPHY,
WET-SEASON CONDITION

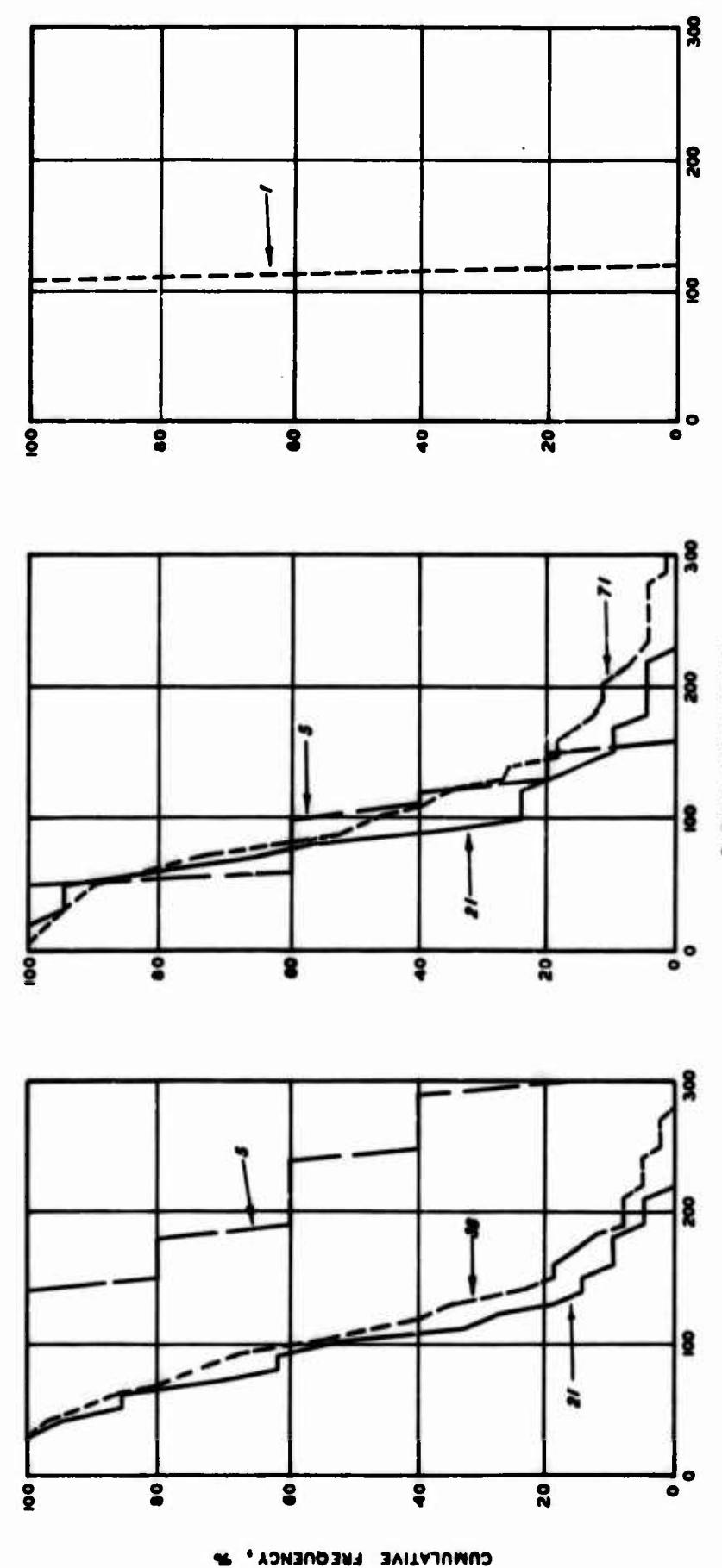
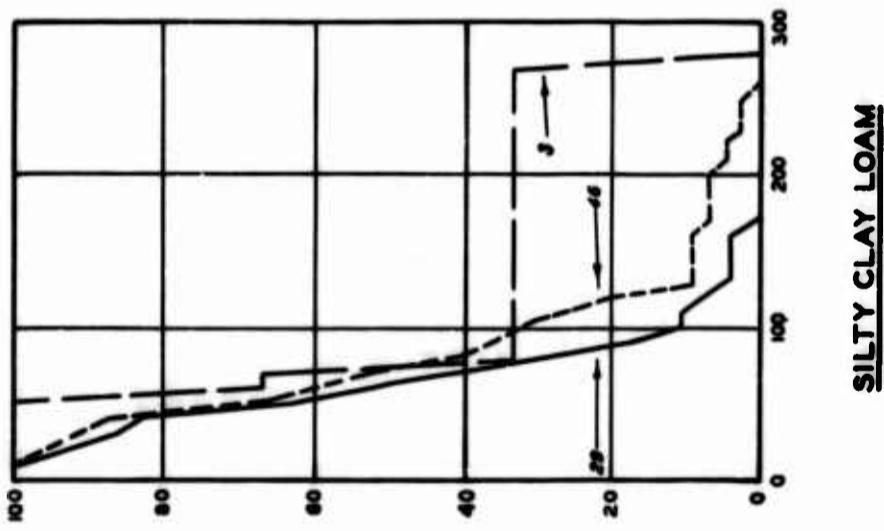
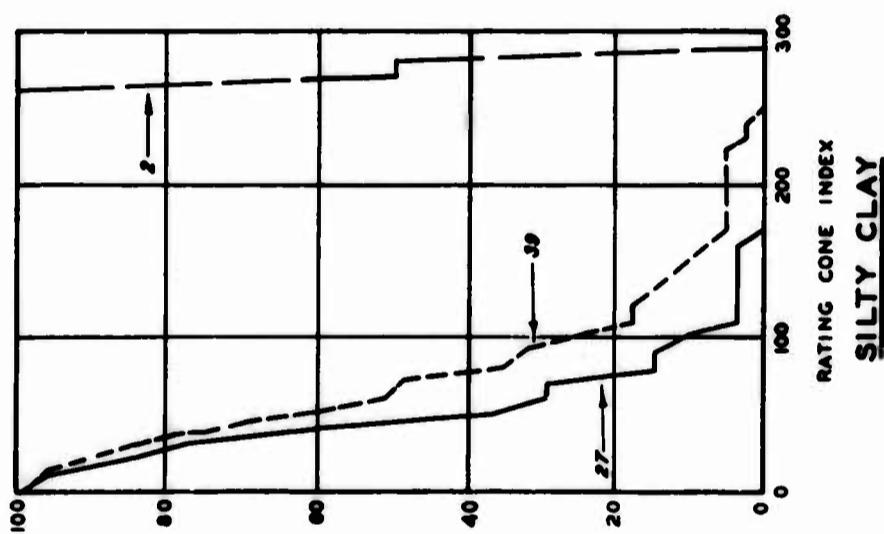
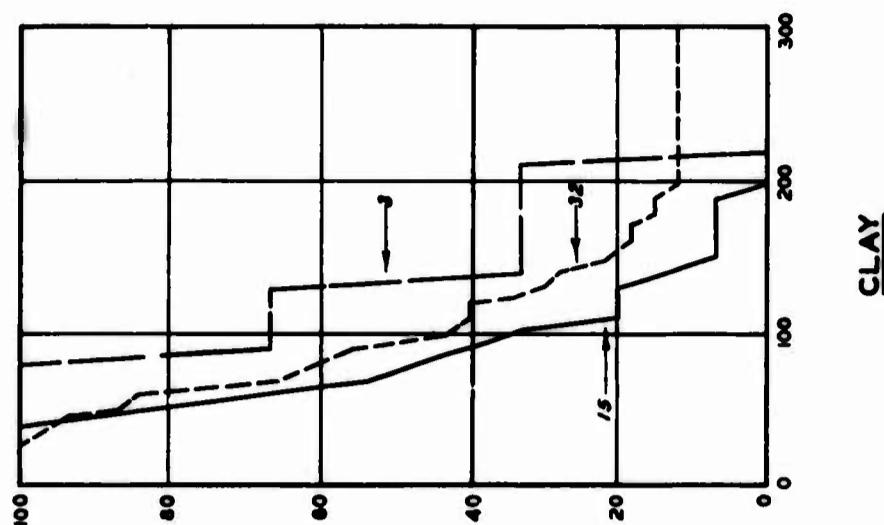


PLATE 8

CUMULATIVE FREQUENCY
OF RATING CONE INDEX
USDA SOILS
**SILTY CLAY LOAM, SILTY CLAY,
AND CLAY**

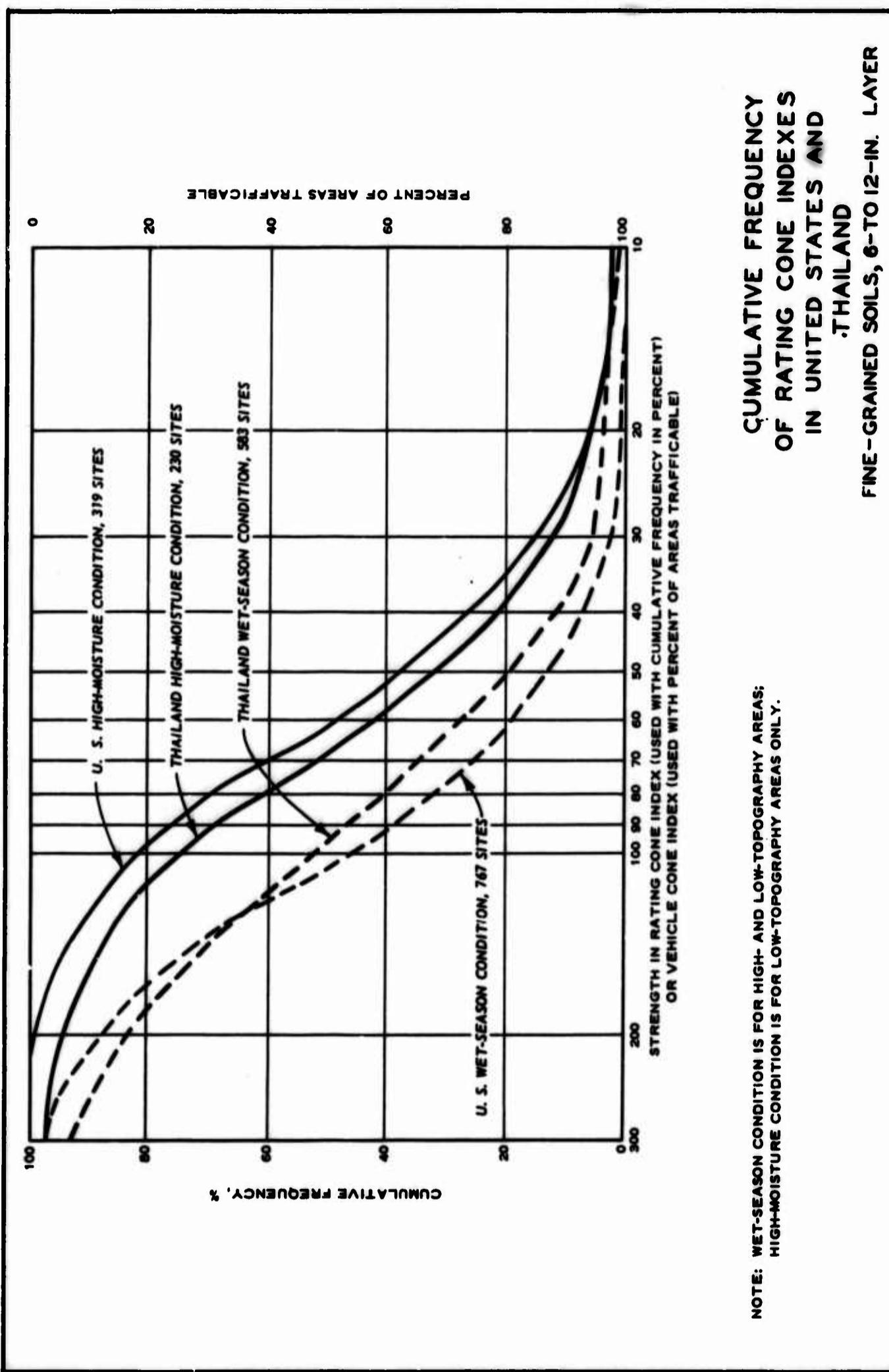
NOTE: NUMBERS BY CURVES DENOTE NUMBER OF SAMPLES USED IN ANALYSIS.



CUMULATIVE FREQUENCY, %

LEGEND

- LOW-MOISTURE CONDITION
- HIGH-MOISTURE CONDITION
- LOW-TOPOGRAPHY, WET-SEASON CONDITION
- HIGH-TOPOGRAPHY, WET-SEASON CONDITION



NOTE: WET-SEASON CONDITION IS FOR HIGH- AND LOW-TOPOGRAPHY AREAS;
HIGH-MOISTURE CONDITION IS FOR LOW-TOPOGRAPHY AREAS ONLY.

CUMULATIVE FREQUENCY
OF RATING CONE INDEXES
IN UNITED STATES AND
.THAILAND

FINE-GRAINED SOILS, 6-TO 12-IN. LAYER

PLATE 10

APPENDIX A: SOURCES OF DATA AND DETAILED PROCEDURES
USED TO OBTAIN DATA

1. The soil and site data pertinent to the soil trafficability classification analyses are presented in tables Al-A6. These data were obtained in six different programs conducted during the period June 1962 through November 1965 in Thailand. Soil data included are texture, Atterberg limits, USCS and USDA soil type, organic content, and specific gravity. Trafficability data included are moisture content, density, depth to water table, and strength, i.e. cone index (CI), remolding index (RI), rating cone index (RCI), and sheargraph cohesion, adhesion and $\tan \phi$ values, for wet-season and high-moisture conditions. Site data included are geographic locations furnished on Army Map Service map sheets and military grid coordinates, topographic class, topographic position, slope, vegetation, and land use. The general locations of the sites are shown on a map of Thailand in fig. 4 of the main text.

2. In tables Al-A6, the trafficability data for the wet-season condition are the data obtained during one visit to a site or an average of data for two or more visits during the wet season, as noted in the tables. At some sites the RI and, consequently, the RCI could not be determined on some visits because of the firmness of the soil. In determining an average RCI for a site which was visited two or more times, the CI data used were those for which RI measurements were available. Data for high-moisture conditions (water table 18 in. or less from the surface) for all trafficability parameters except sheargraph are usually for one visit. If this condition occurred on more than one visit, the data presented in the tables and used in the analyses were for the day of lowest RCI. Sheargraph data are listed under the high-moisture condition only when the water table was at the surface or free water was above the surface.

3. The following paragraphs are grouped according to the six sources of data and contain a detailed discussion of sampling techniques, number of visits to a site and number of measurements taken during each visit, number and geographical locations of the sites, and other important features of the test programs relevant to the data for each of the sources.

Preliminary Survey Study

4. A preliminary study² was made in Thailand to provide guidance for a planned, long-range research program to develop new methods and apply existing methods for measuring and predicting in quantitative and semiquantitative terms the effects of environmental factors on ground vehicles operating in Southeast Asia. Data were obtained from 202 sites visited during the period June-October 1962 by a team of specialist engineers, physical scientists, and technicians. The test sites were concentrated primarily in four geographic areas: the lower Chao Phraya Delta, the Bangkok Plain, the Khorat Plateau in south-central and eastern Thailand, and the Chiang Mai Basin in northwest Thailand. Also, some of the sites visited were located in the southeastern coastal plain. One visit was made to each site. The data collected for the preliminary survey study from 165 sites that are pertinent to this trafficability classification study are presented in table Al.

Soil and trafficability data

5. At each test site, 10 CI penetrations were made in an area approximately 10 by 20 ft. For each penetration, CI was measured at the surface and at 3-in. vertical increments to a depth of 18 in., and then at 6-in. vertical increments to a depth of 30 in., when possible. When soil conditions permitted testing, RI was measured at each site for the 0- to 6- and 6- to 12-in. layers. In some instances remolding index was measured for the 12- to 18-in. layer. Soil samples were taken for moisture content-density determinations for the same soil layers mentioned above. Representative bulk samples were taken from the 0- to 6- and 6- to 12-in. layers and occasionally from the 12- to 18-in. layer for laboratory tests. Samples were taken in an area approximately 1 ft square.

Site data

6. The site data obtained included geographic location of the test site, topographic position, slope, land use, vegetation, depth of soil, surface-water depth, and depth to water table. An attempt was made to sample a wide range of conditions and soil types with emphasis on testing the lowest and wettest areas on the assumption that the test results would

give some insight into the maximum moisture contents and minimum strengths that various soil types would exhibit during the peak of the wet season.

Trafficability Classification Study

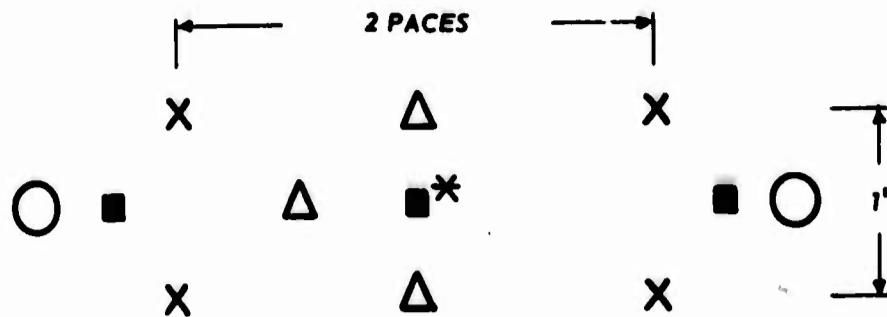
7. Data collected for the trafficability classification study were obtained from 246 sites visited during the period August-October 1964 by a WES soil-trafficability team whose objective was to provide data specifically for the study reported herein. The sites were located within six MERS study areas: Nakhon Sawan, Lop Buri, Chiang Mai, Khon Kaen, Pran Buri, and Chanthaburi. In general, the rainy season extends from May to September in the northern area, from May to October in the central area, and from May to November in the south-central area of Thailand; hence, the period of testing coincided with the expected period of high soil-moisture content during the wettest monsoon season. One visit was made to each site. The data from 238 sites are presented in table A2.

Soil and trafficability data

8. The strength data at each site were obtained as follows. Four sets of CI profiles were taken with measurements taken at the surface and at 3-in. vertical increments to a depth of 18 in.; RI tests were run on two or occasionally three samples from the 6- to 12-in. layer, and surface sheargraph measurements were made at three different locations on the site. Soil samples were taken from the 0- to 6- and 6- to 12-in. layers with the trafficability sampler for determination of moisture content, density, grain-size distribution, Atterberg limits, organic content, and specific gravity. When the soil was too firm for sampling with the trafficability sampler, samples were secured with an Oakfield punch or with a shovel. The locations of test or sampling points for each site are shown in fig. A1.

Site data

9. In each area sites were selected to include a range of different soil types, topographic positions, land uses, and vegetation types with emphasis on the collection of data for soil type-topographic positions for which little or no data had previously been collected, e.g. moderately and highly organic soils on all topographic positions, all soils on upland



- X** CONE INDEX
- REMOLDING INDEX
- *** REMOLDING INDEX (OPTIONAL)
- MOISTURE-DENSITY AND BULK SAMPLES
- Δ** SHEARGRAPH

Fig. A1. Site layout

depressions and ridges, and clayey sands, silts, and clays on upland flats. A special effort was made to include an equal number of sites in each combination of soil type and topographic position.

10. Land use at each site was described in one or more of the following terms:

- a. Undisturbed; not obviously used by man or domestic animals.
- b. Disturbed; obviously used by man or domestic animals.
 - (1) Cropland currently in use (excluding hayfields, orchards, vineyards, tree plantations).
Type _____.
 - (2) Cropland currently lying fallow (excluding hayfields, orchards, vineyards, tree plantations). Type _____.
 - (3) Pasture grazed by domestic animals.
 - (4) Hayfields (not currently being grazed).
 - (5) Orchards, vineyards, tree plantations. Type _____.
 - (6) Lawns, recreation areas.
 - (7) Logged, cut for fuel, newly cleared for slash-and-burn agriculture.

11. Since the essence of this program lay in securing a wide range of soil types and topographic position data during the high-moisture period of the wettest monsoon season, no attempt was made to collect detailed vegetation data; instead, the vegetation was described in general but consistent terms that could be readily identified even by relatively untrained observers. These terms are:

- a. Forest. Trees more than 5 m (approximately 16 ft) tall with the crowns of the trees covering more than 90% of the area. Only the trees are significant; smaller plants are ignored.
- b. Woodland. Trees more than 5 m (approximately 16 ft) tall with the crowns of the trees covering between 40 and 90% of the area.
- c. Savanna. Trees more than 5 m (approximately 16 ft) tall with the crowns of the trees covering from 5 to 40% of the area. The "ground cover" may be wild grass, rice, maize, or any mostly herbaceous plants.
- d. Tall scrub forest. Trees from 1.8 (approximately 6 ft) to 5 m (approximately 16 ft) tall with the crowns covering more than 90% of the area.
- e. Tall scrub woodland. Trees from 1.8 (approximately 6 ft) to 5 m (approximately 16 ft) tall with the crowns covering 40 to 90% of the area.
- f. Tall scrub savanna. Trees from 1.8 (approximately 6 ft) to 5 m (approximately 16 ft) tall with crowns covering from 5 to 40% of the area.
- g. Low scrub. Shrubs from 0.7 (approximately 2.3 ft) to 1.8 m (approximately 6 ft) tall with the crowns covering more than 40% of the area.
- h. Low scrub savanna. Shrubs from 0.7 (approximately 2.3 ft) to 1.8 m (approximately 6 ft) tall with the crowns covering from 5 to 40% of the area.
- i. Tall-grass prairie. Herbaceous plants, usually of mostly grasses or grasslike plants, more than 0.7 m (approximately 2.3 ft) high with the plants covering more than 50% of the ground surface.
- j. Short-grass prairie. Herbaceous plants, usually of mostly grasses or grasslike plants, less than 0.7 m (approximately 2.3 ft) high with the plants covering more than 50% of the ground surface.
- k. Barren. More than 50% of the ground surface is bare, i.e. not covered by plants.

In the definitions listed above no distinction is made between cultivated

and noncultivated plants. Thus, a coconut plantation, a rubber grove, or an orchard is usually a "forest" or a "woodland" and a field of mature rice is a "tall-grass prairie."

12. Topographic slope was measured with an Abney hand level at each site on the contiguous area over which no change in true slope occurred. Topographic position was identified as one of the following:

- a. Upland flat (UF)
- b. Upland depression (UD)
- c. Upland ridge (UR)
- d. Upper slope (US)
- e. Lower slope (LS)
- f. Terrace flat (T)
- g. Terrace slope (TS)
- h. Bottomland flat (BF)
- i. Bottomland depression (BD)
- j. Natural levee (NL)
- k. Stream bottom (SB)
- l. Tidal flat (TF)
- m. Drainage ditch (DD)
- n. Beach (B)

Other data collected included depth of water over soil surface, depth to ground water, and depth to bedrock if within several feet of the surface.

Surface Composition Study

13. The objective of the surface composition study³ was to secure data for establishing the range in variation of areal and seasonal soil strength in Thailand and for mapping soils exhibiting similar trafficability characteristics in selected study areas in Thailand. These data were obtained during the period April 1964 through June 1965 by a soil trafficability team. The study areas and the number of visits to sites in each area are shown in the following tabulation.

<u>Area</u>	<u>No. of Visits to Site</u>
Nakhon Sawan	2
Lop Buri	3
Chiang Mai	2
Pran Buri	1
Khon Kaen	2
Chanthaburi	1

The data collected for the surface composition study from 224 sites that are pertinent to the trafficability classification study are presented in table A3.

Soil and trafficability data

14. At each site, soil-strength data were collected for CI, RI, and sheargraph tests. Four or more CI profiles were obtained. Measurements for each profile were made at 1-in. vertical increments to a depth of 18 in. RI tests were conducted on samples from the 0- to 6- and 6- to 12-in. layers. If the results of the tests on two samples from each layer were not in close agreement, a third RI test was made. Sheargraph tests were performed on the soil surface at only one point on the site. Soil samples were taken with the trafficability sampler in 3-in. increments to a depth of 12 in. for the determination of moisture content and density. Bulk samples were taken for laboratory determination of grain-size distribution, Atterberg limits, organic content, and specific gravity. At each site a pit was dug and the soil profile was described to a depth of 18 in. Data also were obtained on the color, pH, and reaction to HCl of soil horizons. From these data the soil series were identified.

Site data

15. The classification of site data for this study was the same as that used in the trafficability classification study (see paragraphs 10-12 of this appendix).

Soil Moisture-Strength Study

16. The objective of the soil moisture-strength study⁴ was to develop means for quantitatively predicting soil-moisture contents and

strength of the soil for use in predicting trafficability of the critical soil layer. Data for this study were obtained from 75 sites during the period May 1964-November 1965 by teams of Thai engineers and technicians. Data were collected during two wet seasons and one dry season. Sites were selected to provide a range in climate, topography, soil type, and land use. The sites were located in seven MERS study areas and in the vicinity of Bangkok, Thailand.

17. Two types of sites, prediction-development (PD) and survey (TS), were established. Data from PD sites were used to develop rainfall-soil moisture-strength relations, and data from the TS sites will be used to check the accuracy of soil moisture-strength predictions that were based on the relations developed from PD site data. Twenty PD and 55 TS sites were established. The PD sites were visited daily to collect unit electrical resistivity data for use in measurement of soil-moisture content, and these sites and the TS sites also were visited one or more times each month to collect trafficability data. The data from this study that are pertinent to the soil trafficability classification study are presented in table A4.

Soil and trafficability data

18. Data from the PD and TS sites were collected in a 21- by 36-ft sampling area divided into 3-ft-square plots. Samples and direct measurements of the soil were taken in three randomly selected plots during each sampling visit to the site.

19. Six CI penetrations, two in each of three randomly selected plots, were made on each visit, and measurements of CI were averaged for the 0- to 6- and 6- to 12-in. layers. RI tests were performed on samples of the 6- to 12-in. layer from each of the three plots. Data from the tests were averaged for each visit. The RCI for a specific visit was then tabulated in the usual manner. An attempt was made to obtain strength measurements concurrently with moisture measurements. CI and especially RI data could not be obtained as frequently as moisture data and at some sites could not be obtained at all during the dry season due to firmness of the soil. At some sites flooding prevented data collection for long periods during the wet season.

20. For each visit sheargraph measurements on the soil surface were made at two spots on each of the three selected plots and averaged. For most sites these data were obtained on four visits during the period of testing.

21. Soil samples of the 3-in. soil layers from the surface to a depth of 18 in. were taken with the trafficability sampler for determination of moisture content. Samples were obtained from two spots in each of three plots. The moisture content data were averaged for each 3-in. layer and for the 0- to 6- and 6- to 12-in. layers.

22. When a thin-walled piston type soil sampler could be used to obtain a relatively undisturbed sample of proper length, that sample was saved for moisture content and density determinations. Also, when the soil was moist, two 2-in. cores were taken with the San Dimas or drive-type sampler for determination of density. The density listed in the summary table for each site is the average of density values determined from tests on piston-type soil samples, or where no such samples were obtained, it is the average of the two density values determined from tests on San Dimas soil samples.

23. The USDA and USCS soil types for each site were determined from mechanical analysis and Atterberg limits of bulk samples taken from the 0- to 6- and 6- to 12-in. layers. The sample tested in the laboratory for each layer was a composite of three samples taken at each end and along a point on one side of the site. The bulk soil samples were also tested to determine the organic content and specific gravity of the soil layer.

Site data

24. Measurements of rainfall, depth to ground water, and ambient temperature were made daily at each of the PD sites.

25. Data describing the topographic position, slope, land use, and vegetation at a site were collected from observations in the field during the period of study. The systems for classifying topographic position, land use, and slope are the same as those used in the trafficability classification study (see paragraphs 10-12 of this appendix).

U. S. Army Cold Regions Research and Engineering
Laboratory (CRREL) Airphoto Pattern Study

26. The purpose of the CRREL airphoto pattern study⁵ was to develop a method for interpreting, classifying, and mapping terrain features of Thailand from airphotos in terms of their effect on ground mobility. Data were obtained from 191 sites during the period 4 September-18 October 1964 by a team of specialist engineers and physical scientists.

27. The sites were located in two MERS study areas selected for detailed study--Lop Buri and Chanthaburi. The sites were selected primarily on the ability of the analyst to recognize tone and texture on aerial photographs. One visit was made to each site. The data from 121 sites pertinent to the trafficability classification study reported herein are presented in table A5.

Soil and trafficability data

28. Three or more CI penetrations were made at each site. For each penetration, CI generally was measured at 1-in. increments from the surface to a depth of 18 in. RI tests were made on samples from the 6- to 12-in. layer. Samples for determination of moisture content and density were taken with the trafficability sampler in 3-in. vertical increments from the surface to a depth of 12 in. The data were averaged for the 0- to 6- and 6- to 12-in. layers. (The density values are questionable and are not listed in the table.) When the soil was too firm to be sampled with the trafficability sampler, samples for moisture only were taken with the Oakfield punch. Bulk samples for determination of grain size, Atterberg limits, organic content, and specific gravity were taken from the 0- to 6- and 6- to 12-in. layers. The soil profile was described briefly in pedological terms.

Site data

29. The topography class, topographic position, and land use identification for each site were based on a general description or were interpreted from aerial or ground photographs of the site.

Terrain-Vehicle Tests

30. The terrain-vehicle test program⁶ was conducted to verify a mathematical model of cross-country vehicle performance previously developed in the United States, by applying it to tropical terrains and modifying it as required. Data for the program were collected in traffic test courses during the period September through October 1965 by a team of engineers, physical scientists, and technicians. The test courses ranged from 10 to 20 ft (hydrologic geometry, designated HG, test courses), to several hundred feet (surface geometry, designated SG, and multiple, designated M, test courses), to several thousand feet (cross-country, designated CC, test courses) in length. For purposes of this study, each of the HG, SG, and M test courses was designated as a site. Each of the CC test courses was subdivided into two or more short stretches, based on changes in soil type, topography, and land use. These stretches were also designated as sites; e.g., test course CC2 was subdivided into sites CC2-A, -B, and -C. The data used in this report are from 23 sites located in the MERS study area of Khon Kaen. Data from the vehicle test program pertinent to the trafficability classification study are presented in table A6.

Soil and trafficability data

31. The data in the table for each site are average values for the total number of visits. On each visit 10 or more CI penetrations were made. For each penetration, CI was measured at the surface, at depths of 1 in. and 3 in., and then at 3-in. vertical increments to 24 or 30 in. Several RI tests were made on samples from the 0- to 6- and 6- to 12-in. layers. Sheargraph measurements of the soil surface were taken in one small area. One set of samples per visit was obtained from the 0- to 1/4- and 0- to 1-in. soil layers for determination of moisture content, and another set of samples was obtained from the 0- to 6- and 6- to 12-in. layers for determination of moisture content and density. Bulk samples for determination of grain size, Atterberg limits, and specific gravity were obtained from the 0- to 6- and 6- to 12-in. layers.

Site data

32. Geographic location, topography class, topographic position, slope, land use, and vegetation data were obtained from general terrain information secured in the field. Again, these data, as tabulated, represent average conditions of the test area.

Tables A1-A6

Table A1
Preliminary Survey Study
Summary of Site, Soil, and Trafficability Data

Site No.	Map Sheet	Grid Coor- di- nates	Topog- raphy Class	Section A. Site Data				Depth of Layer in.	Section B. Soil Data			Organic Content %	Specific Gravity						
				Topo- graphic Position	Slope	Vegetation	Land Use		USDA			Atter- berg Limits							
									Sand	Silt	Clay	Type*							
1	5153III	873521	Low	Bottomland flat	0	Bare	Cultivated	0-6 6-12	-- 12	54 34	34 C	SICL	92	63 65	27 27	36 36	CH CH	-- --	2.58 2.64
3	5153IV	811787	Low	Drainage ditch	0	Short grass	Grazed	0-6 6-12	4 7	28 30	68 63	C C	96 93	63 64	32 36	31 28	MH MH	-- --	2.59 2.57
4	5153IV	811787	Low	Bottomland flat	0	Grass (6 in. high)	Cultivated (idle)	0-6 6-12	4 12	28 18	68 70	C C	97 98	66 65	34 32	32 33	MH CH	-- --	2.48 2.61
5	5153IV	811787	Low	Bottomland depression	0	Grass (8 in. high)	Cultivated (idle)	0-6 6-12	15 1	14 14	71 85	C C	100 100	72 73	38 34	34 39	MH CH	-- --	2.52 2.55
8	5253IV	170848	Low	Lower slope	1	Short grass	Cultivated (idle)	0-6 6-12	56 54	19 22	25 24	SCL	63 63	20 25	-- 18	NP 7	ML CL-ML	-- --	2.56 2.61
9	5153I	105821	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6 6-12	3 10	72 30	25 60	SIL	100 94	81 77	65 39	16 38	OH MH	-- --	2.34 2.56
12	5254I	426187	High	Terrace flat	0	Melons	Cultivated	0-6 6-12	11 7	45 22	44 71	SIC	92 94	57 54	36 37	21 17	MH MH	-- --	2.60 2.61
13	5255II	670353	High	Terrace flat 1-2	1-2	Brush and trees	Undisturbed	0-6 6-12	28 33	27 22	45 45	C C	78 73	40 44	29 29	11 15	ML ML	-- --	2.64 2.65
14	5355I	049455	Low	Bottomland flat	1	Short grass	Cultivated (idle)	0-6 6-12	11 15	21 32	68 53	C C	92 92	62 59	34 26	28 33	MH CH	-- --	2.70 2.69
15	5456III	925612	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6 6-12	10 6	40 28	50 66	SIC	93 95	59 62	30 28	29 34	CH CH	0.95 0.95	2.63 2.69
16	5457II	269981	Low	Terrace flat	0	Short grass	Cultivated (idle)	0-6 6-12	66 62	24 23	10 15	SL	49 49	22 22	-- 15	NP 7	SM SM-SC	1.05 --	2.61 2.69
17	5457II	269989	Low	Terrace flat	0	Short grass	Cultivated (idle)	0-6 6-12	55 55	27 28	18 17	SL	57 55	38 29	15 13	23 16	CL CL	-- --	2.58 2.69
18	5457II	269989	Low	Bottomland depression	0	Short grass	Cultivated (idle)	0-6 6-12	57 53	27 26	16 21	SL	62 47	25 26	15 21	10 5	CL SM-SC	-- --	2.61 2.73
19	5558II	623412	Low	Bottomland flat	0	Rice	Cultivated	0-6 6-12	47 42	33 31	20 27	L	65 70	36 36	19 18	17 18	CL CL	0.78 --	2.71 2.71
20	5558IV	499639	High	Upper slope	1	Trees and brush	Undisturbed	0-6 6-12	85 86	12 12	3 2	LS	24 23	-- 17	NP 16	1 1	SM SM	-- --	2.61 2.65
21	5559II	771755	Low	Stream bottom	0	Short grass	Grazed	0-6 6-12	92 93	6 5	2 2	S	17 13	-- 20	-- --	NP NP	SM SM	-- --	2.63 2.66
22	5757IV	551305	High	Upland flat	2	Brush and trees	Undisturbed	0-6 6-12	81 83	17 15	2 2	LS	35 34	-- 17	-- --	NP NP	SM SM	-- --	2.57 2.64
23	5757IV	590290	Low	Bottomland flat	0	Marsh grass	Grazed	0-6 6-12	73 80	22 17	5 3	SL	46 42	-- 18	-- --	NP NP	SM SM	-- --	2.62 2.65
24	5754IV	387080	High	Terrace flat	1	Tall trees and bamboo grass	Undisturbed	0-6 6-12	51 25	34 51	15 24	SIL	73 92	24 27	-- 19	NP 8	ML CL	-- --	2.59 2.62
25	5754III	610967	High	Upland flat	1	Trees	Undisturbed	0-6 6-12	72 72	7 6	21 22	SCL	36 37	18 20	-- 15	NP 5	SM SM-SC	0.46 --	2.61 2.60
26	5754III	550980	Low	Bottomland flat	0	Tall trees	Undisturbed	0-6 6-12	87 82	13 15	0 3	S	19 21	-- 16	NP 16	0 0	SM SM	-- --	2.55 2.65
28	5754IV	400140	Low	Bottomland flat	0	Open trees with some grass	Cultivated (idle)	0-6 6-12	67 71	19 22	14 7	SL	37 38	-- 18	-- --	NP NP	SM SM	0.42 0.32	2.60 2.61
29	5754IV	329150	Low	Bottomland flat	0	Scattered trees	Cultivated	0-6 6-12	71 52	21 33	8 15	SL	50 53	14 14	-- --	NP NP	SM ML	0.46 0.42	2.63 2.62
30	5956II	920635	Low	Bottomland depression	0	Rice	Cultivated	0-6 6-12	51 71	29 13	20 16	L	68 55	18 19	-- --	NP NP	ML ML	1.55 1.24	2.62 2.65
31	5956II	923659	Low	Natural levee	0	Heavy brush with some trees	Undisturbed	0-6 6-12	73 62	6 16	21 22	SCL	40 62	-- --	NP NP	SM ML	1.08 0.42	2.56 2.62	
32	5956II	915672	Low	Upper slope	1	Sparse grass with some trees	Cultivated (idle)	0-6 6-12	82 91	11 8	7 1	LS	30 25	-- --	NP NP	SM SM	0.38 0.36	2.63 2.58	
34	5956I	858858	Low	Bottomland depression	1	Short grass	Grazed	0-6 6-12	71 67	23 24	6 9	SL	38 41	-- --	NP NP	SM SM	0.62 0.58	2.63 2.59	
37	5958IV	603647	High	Upper slope	1	Open forest/brush and short grass	Undisturbed	0-6 6-12	62 78	26 15	12 7	SL	55 27	-- --	NP NP	ML SM	0.70 0.50	2.62 2.62	
38	5960IV	703285	High	Upper slope	3	Short grass	Grazed	0-6 6-12	89 89	6 5	5 6	S	18 18	-- --	NP NP	SM SM	1.29 0.58	2.61 2.64	

(Continued)

* G = gravelly, VG = very gravelly.

(1 of 12 sheets)

Table A1 (Continued)

(Continued)

* c_u , ultimate soil-to-soil cohesion; ϕ_u , ultimate soil-to-soil angle of internal friction; a_{ur} , ultimate soil-to-rubber adhesion; α_u , ultimate soil-to-rubber angle of friction.

α_{ur} , ultimate soil-to-rubber angle of friction.

[†] Plus (+) denotes depth of water above surface.

(2 of 12 sheets)

Table A1 (Continued)

Site No.	Map Sheet	Section A. Site Data							Section B. Soil Data										
		Grid Coor- di- nates	Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA Texture by Wt. %			By Wt %	Atter- berg Limits			Organic Content %	Specific Gravity		
									Sand	Silt	Clay		LL	PL	PI				
39	5960IV	700348	Low	Terrace flat	0	Bare	Cultivated	0-6	51	36	13	L	65	--	--	NP	ML	0.74	2.63
40	5960IV	660420	High	Upland flat	0.5	Tall weeds with scattered trees	Cultivated (idle)	0-6	68	11	21	SCL	45	--	--	NP	SM	1.46	2.61
41	5960IV	655415	High	Lower slope	1	Trees	Undisturbed	0-6	82	18	0	VCLS	13	--	--	NP	SM	1.15	2.76
42	5962III	698832	High	Upper slope	2	Scattered trees	Undisturbed	0-6	72	12	16	SL	31	--	--	NP	SM	0.90	2.64
43	5963III	614180	High	Upland flat	0	Heavy tree growth	Undisturbed	0-6	50	29	21	GL	37	39	27	12	SM	2.20	3.14
44	5963III	590171	Low	Bottomland flat	0	Low brush and scattered trees	Cultivated (idle)	0-6	35	46	19	L	81	38	26	12	ML	2.87	2.64
45	5862I	391151	High	Upland flat	0.5	Short grass and scattered trees	Cultivated (idle)	0-6	45	38	17	L	91	16	--	NP	ML	2.01	2.58
47	5763III	640201	High	Upland flat	0	Trees	Undisturbed	0-6	69	24	7	SL	47	--	--	NP	SM	0.38	2.53
49	5763III	640220	Low	Terrace flat	0	Rice	Cultivated	0-6	54	37	9	SL	60	--	--	NP	ML	0.50	2.61
50	5763III	505279	Low	Terrace flat	0	Bare	Cultivated	0-6	46	32	22	L	85	17	17	0	ML	0.58	2.55
51	5563II	683239	Low	Terrace flat	0	Short grass	Cultivated (idle)	0-6	72	20	8	SL	53	--	--	NP	ML	0.46	2.58
52	5462I	312063	High	Lower slope	15	Scattered trees and tall grass	Undisturbed	0-6	82	8	10	LS	50	--	--	NP	SM	0.86	2.53
53	5462I	326070	High	Lower slope	7	Bamboo with scattered trees	Undisturbed	0-6	45	19	36	CL	55	22	--	NP	ML	1.55	--
54	5563II	683239	Low	Terrace flat	0	Short grass	Cultivated (idle)	0-6	72	20	8	SL	53	--	--	NP	ML	0.46	--
55	5561II	661493	High	Upland flat	1	Trees and brush	Undisturbed	0-6	94	6	0	S	28	--	--	NP	SM	0.32	2.62
56	5560II	696228	High	Upper slope	1	Brush and trees	Undisturbed	0-6	87	13	0	S	35	--	--	NP	SM	0.74	2.59
57	5458II	142367	High	Upper slope	3	Short grass	Cultivated (idle)	0-6	82	14	4	LS	38	13	13	0	SM	0.62	2.66
58	5358II	204341	Low	Bottomland flat	0	Bare	Cultivated	0-6	100	0	0	S	32	--	--	NP	SM	1.77	2.61
59	5357II	033062	High	Upper slope	1	Short grass	Lawn	0-6	100	0	0	S	34	--	--	NP	SM	0.88	2.62
60	5156II	001670	Low	Bottomland flat	0	Rice	Cultivated	0-6	40	30	30	C	66	50	19	31	CH	0.88	2.57
62	5151IV	770977	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6	9	37	54	C	92	--	--	NP	SM	0.32	2.72
63	5151IV	770977	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6	6	36	58	C	96	--	--	NP	SM	0.32	--
66	5154II	061031	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6	39	49	12	L	67	--	--	NP	ML	0.58	--
67	5151IV	795940	Low	Bottomland flat	0	Brush	Grazed	0-6	9	39	52	C	97	79	25	54	CH	1.82	--
68	5151IV	795940	Low	Bottomland flat	0	Brush and short grass	Grazed	0-6	17	43	45	SIC	91	70	32	38	CH	2.22	--
69	5151IV	795940	Low	Bottomland flat	0	Brush and short grass	Grazed	0-6	5	48	47	SIC	97	69	30	39	CH	2.20	2.72
70	5150II	087445	High	Terrace flat	0	Recently cleared of trees	Fruit plantation	0-6	76	18	6	SL	28	--	--	NP	SM	--	--
71	5248I	530000	Low	Bottomland flat	0	Rice	Cultivated	0-6	73	9	18	SL	32	--	--	SC	1.35	--	
73	5248I	635955	Low	Beach	0.5	Bare	Undisturbed	0-6	96	2	2	S	20	--	--	NP	SM	0.22	--
74	5449III	973040	Low	Terrace flat	0	Short grass	Grazed	0-6	45	52	3	SIL	70	17	17	0	ML	2.91	--
75	5449III	945008	High	Upper slope	6	Rubber plantation	Cultivated	0-6	64	19	17	SL	40	34	24	10	SM	3.94	--

(Continued)

(3 of 12 sheets)

Table A1 (Continued)

Site No.	No. of Visits	Section C. T-Airificability Data												Depth to Water Table in.						
		Wet-Season Condition						High-Moisture Condition												
		Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	Sheargraph cu psi	Tan ϕ_u	cu psi	Tan ϕ_u	Dry Density lb/cu ft	MC, %	CI	RI	RCI	Sheargraph cu psi	Tan ϕ_u	cu psi	Tan ϕ_u
39	1	0-6	98.9	19.4	108	--	--	98.9	19.4	108	--	101.0	16.0	114	0.48	55	101.0	16.0	114	0.48
40	1	0-6	96.1	11.1	198	--	--	94.6	14.1	400	--	97.4	11.6	187	--	--	94.6	14.1	400	--
41	1	0-6	--	--	442+	--	--	94.6	14.1	400	--	97.4	11.6	187	--	--	94.6	14.1	400	--
42	1	0-6	102.3	10.2	224	--	--	94.6	14.1	400	--	118.2	10.4	266	--	--	94.6	14.1	400	--
43	1	0-6	104.5	18.6	191	--	--	94.6	14.1	400	--	104.5	18.6	191	--	--	94.6	14.1	400	--
44	1	0-6	88.0	26.6	106	0.60	64	94.6	14.1	400	--	91.4	27.9	130	0.87	113	94.6	14.1	400	--
45	1	0-6	--	--	104	0.28	29	94.6	14.1	400	--	94.6	22.4	175	0.51	89	94.6	22.4	175	0.51
47	1	0-6	96.1	14.1	400	--	--	94.6	14.1	400	--	108.6	9.2	489	--	--	94.6	14.1	400	--
49	1	0-6	101.0	21.8	94	0.93	87	94.6	14.1	400	--	101.0	21.8	94	0.93	87	94.6	14.1	400	--
50	1	0-6	99.6	24.6	119	0.24	29	94.6	14.1	400	--	99.6	19.4	172	--	--	94.6	14.1	400	--
51	1	0-6	106.1	17.5	209+	1.12	234+	94.6	14.1	400	--	111.7	14.6	335+	0.48	161+	94.6	14.1	400	--
52	1	0-6	102.4	7.6	486+	--	--	94.6	14.1	400	--	117.0	12.0	273+	--	--	94.6	14.1	400	--
53	1	0-6	--	8.8	184	--	--	94.6	14.1	400	--	6-12	8.1	272	--	--	94.6	14.1	400	--
54	1	0-6	104.2	20.6	242	0.78	189	94.6	14.1	400	--	6-12	17.3	293	0.33	97	104.2	20.6	242	0.78
55	1	0-6	94.2	9.4	216	--	--	94.6	14.1	400	--	6-12	97.0	7.6	255	--	104.2	20.6	242	0.78
56	1	0-6	103.6	7.2	336	--	--	94.6	14.1	400	--	6-12	98.7	3.0	574	--	104.2	20.6	242	0.78
57	1	0-6	94.6	9.6	113	--	--	94.6	14.1	400	--	6-12	93.9	12.8	179	--	104.2	20.6	242	0.78
58	1	0-6	--	3.7	750+	--	--	94.6	14.1	400	--	6-12	--	6.8	--	--	94.6	14.1	400	--
59	1	0-6	103.6	7.6	184	--	--	94.6	14.1	400	--	6-12	105.5	5.2	330+	--	104.2	20.6	242	0.78
60	1	0-6	77.4	39.8	40	1.16	46	94.6	14.1	400	--	6-12	73.0	44.9	77	--	104.2	20.6	242	0.78
62	1	0-6	77.7	37.5	31	0.79	24	94.6	14.1	400	--	6-12	76.2	38.1	61	0.82	104.2	20.6	242	0.78
63	1	0-6	79.2	31.0	39	0.97	38	94.6	14.1	400	--	6-12	79.0	31.3	67	0.96	104.2	20.6	242	0.78
66	1	0-6	100.4	19.4	115	0.47	54	94.6	14.1	400	--	6-12	98.0	19.4	167	0.27	104.2	20.6	242	0.78
67	1	0-6	85.2	27.2	34	0.87	30	94.6	14.1	400	--	6-12	78.0	30.5	37	0.33	85.2	27.2	34	0.87
68	1	0-6	76.1	39.4	51	0.71	36	94.6	14.1	400	--	6-12	75.5	42.8	58	0.68	76.1	39.4	51	0.71
69	1	0-6	56.5	67.0	8	0.49	4	94.6	14.1	400	--	6-12	49.6	82.0	8	0.54	56.5	67.0	8	0.49
70	1	0-6	--	--	210+	--	--	94.6	14.1	400	--	6-12	--	--	--	--	94.6	14.1	400	--
71	1	0-6	88.9	25.4	61	0.42	26	94.6	14.1	400	--	6-12	99.6	17.8	230+	0.40	91.1	30.6	104	1.20
73	1	0-6	91.1	30.6	104	1.20	125	94.6	14.1	400	--	6-12	84.2	30.8	225	1.88	91.1	30.6	104	1.20
74	1	0-6	116.7	23.4	128	1.30	166	94.6	14.1	400	--	6-12	97.0	22.8	133	0.11	116.7	23.4	128	1.30
75	1	0-6	83.6	30.7	78	0.42	33	94.6	14.1	400	--	6-12	84.6	25.9	157	1.11	83.6	30.7	78	0.42

(Continued)

(4 of 12 sheets)

Table A1 (Continued)

Site No.	Map Sheet	Grid Coor- di- nates	Section A. Site Data					Depth of Layer in.	Section B. Soil Data					Organic Con- tent %	Spec- ific Grav- ity				
			Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation	Land Use		USDA			Pv Wt %	Atter- berg Limits						
									Sand	Silt	Clay		Fines	LL	PL	PI			
76	5547IV	310535	Low	Bottomland flat	0	Short grass	Grazed	0-6 6-12	37 40	51 48	12 12	SIL	88 87	41 30	31 22	10 8	ML CL	4.82 4.80	-- 2.58
77	5648IV	832932	Low	Bottomland flat	0	Marsh grass	Undisturbed	0-6 6-12	53 33	31 42	16 25	SL	74 72	49 37	34 23	15 14	ML CL	4.44 2.42	-- --
78	5150I	085730	Low	Bottomland flat	0	Mangrove	Undisturbed	0-6 6-12	65 67	26 25	9 8	SL	52 54	-- 48	-- 40	8 8	ML CL	2.22 2.94	-- 2.60
80	4867III	202814	High	Terrace flat	2	Grass, brush, and small trees	Undisturbed	0-6 6-12	53 48	30 30	17 22	SL	57 62	-- 24	-- 16	8 8	CL CL	2.12 1.76	-- 2.66
81	4867IV	190832	High	Upland flat	1	Small trees, brush, and grass	Undisturbed	0-6 6-12	74 73	20 20	6 7	SL	35 37	-- 16	-- NP	SM SM	3.00 0.94	-- 2.63	
82	4867IV	169837	High	Upper slope	35	Scattered trees and brush	Undisturbed	0-6 6-12	62 58	23 25	15 17	GL	34 42	21 22	17 14	4 8	SM-SC SC	3.44 1.60	-- 2.66
83	4867IV	149863	High	Upper slope	6	Scattered small trees and brush	Undisturbed	0-6 6-12	78 69	7 21	15 10	VGSL	12 14	-- 21	-- 15	6 6	SP-SM SM-SC	0.88 1.89	-- 3.31
84	4867IV	129859	Low	Natural levee	0	Garden	Cultivated	0-6 6-12	18 17	54 50	28 33	SICL	83 88	-- 40	-- 24	16 16	CL CL	2.67 3.11	-- 2.65
85	4867IV	129859	Low	Bottomland depression	0	Bare	Cultivated	0-6 6-12	18 26	47 39	35 35	SICL	85 77	42 41	26 24	16 17	ML CL	3.00 1.14	-- 2.70
86	4767I	958948	Low	Bottomland depression	0	Bare	Cultivated	0-6 6-12	25 17	48 43	27 40	CL	82 88	40 46	24 24	16 22	CL CL	1.66 2.00	-- 2.69
87	4767I	947947	Low	Upper slope	2	Bare	Cultivated	0-6 6-12	17 19	41 41	42 40	SICL	88 86	51 51	22 22	29 29	CH CH	3.04 1.60	-- 2.66
88	4870IV	213999	Low	Lower slope	0.5	Rice	Cultivated	0-6 6-12	11 7	53 51	36 42	SICL	94 96	-- 49	-- 26	23 23	CL CL	6.21 3.30	-- 2.69
89	4870IV	213001	Low	Natural levee	0	Short, heavy grass	Lawn	0-6 6-12	38 44	45 38	17 18	L	68 64	-- 30	-- 21	9 9	CL CL	4.80 2.36	-- 2.66
90	4870III	173905	High	Terrace flat	3	Short grass and scattered trees	Grazed	0-6 6-12	36 39	44 43	20 18	L	72 67	-- 23	-- 13	10 10	CL CL	3.27 1.60	-- 2.65
91	4869IV	105650	High	Terrace flat	7	Tall grass	Grazed	0-6 6-12	26 25	42 37	32 38	CL	83 93	63 63	40 34	23 29	MH MH	6.45 3.14	-- 2.81
92	4869III	007530	High	Upper slope	12	Scattered trees and grass	Undisturbed	0-6 6-12	62 62	25 25	13 13	SL	47 47	-- 19	-- 15	4 4	SM-SC SM-SC	2.41 1.26	-- 2.66
93	4766IV	650465	Low	Bottomland depression	7	Tall grass	Grazed	0-6 6-12	20 36	48 37	32 27	SICL	87 75	-- 34	-- 17	17 17	CL CL	3.55 1.56	-- 2.66
94	4766IV	650465	High	Upper slope	28	Small trees	Undisturbed	0-6 6-12	-- 66	-- 26	-- 8	VGSL	-- 15	-- --	-- NP	SM SM	-- 1.33	-- 2.69	
95	4766III	657445	High	Upper slope	2	Small trees and brush	Undisturbed	0-6 6-12	56 52	20 20	24 28	SCL	55 57	-- 30	-- 15	15 15	CL CL	0.70 0.46	-- 2.67
96	4766I	893574	Low	Bottomland flat	0	Bare	Cultivated	0-6 6-12	28 53	37 29	35 18	CL	77 55	33 26	19 15	14 11	CL CL	1.16 0.78	-- 2.63
97	4767II	920680	Low	Terrace flat	1	Short grass	Cultivated (idle)	0-6 6-12	32 53	43 28	25 19	L	75 53	33 23	20 16	13 7	CL CL-ML	1.52 0.44	-- 2.67
98	4767II	970760	High	Terrace flat	1	Short grass	Grazed	0-6 6-12	60 53	29 29	11 18	SL	47 53	18 19	16 12	2 7	SM CL-ML	0.98 0.54	-- 2.62
99	4767I	970831	High	Upper slope	35	Tall trees and brush	Undisturbed	0-6 6-12	45 35	23 19	32 46	SCL	58 68	60 57	34 30	26 27	MH MH	5.46 1.76	-- 2.61
100	5455IV	909551	High	Lower slope	1	Bamboo grass	Undisturbed	0-6 6-12	64 60	24 23	12 17	SL	44 47	-- 20	-- 13	7	SM-SC SM-SC	-- --	-- 2.63
101	5455IV	919537	High	Upper slope	1	Short trees and brush	Undisturbed	0-6 6-12	64 65	28 31	8 4	SL	49 53	14 17	14 14	0 3	SM ML	-- --	2.64
102	5455III	943369	High	Lower slope	1-2	Tall trees and bamboo grass	Undisturbed	0-6 6-12	74 70	20 24	6 6	SL	43 47	-- 16	-- --	NP NP	SM SM	-- --	-- --
103	5455IV	942468	High	Upper slope	2.5	Tall trees and brush	Undisturbed	0-6 6-12	78 75	15 18	7 7	LS	30 32	-- 13	-- --	NP NP	SM SM	-- --	2.64
104	5455IV	929416	Low	Bottomland flat	0	Bamboo and short grass	Undisturbed	0-6 6-12	52 48	30 29	18 23	L	57 58	-- 26	-- 15	10 10	CL CL	0.95 0.46	-- 2.64
105	5455III	947340	High	Lower slope	1-2	Tall trees (thick)	Undisturbed	0-6 6-12	72 69	20 22	8 9	SL	40 40	13 11	-- --	NP NP	SM SM	-- --	-- --
106	5456II	045705	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6 6-12	47 48	30 30	23 22	L	61 60	31 25	13 11	18 14	CL CL	0.54 0.38	-- 2.66
107	5456II	045705	Low	Bottomland flat	0	Bare	Cultivated	0-6 6-12	45 49	33 33	22 18	L	64 58	21 27	13 11	8 16	CL CL	1.98 0.78	-- 2.66

(Continued)

(5 of 12 sheets)

Table A1 (Continued)

Section C. Trafficability Data																
Site No.	No. of Visits	Wet-Season Condition						High-Moisture Condition								Depth to Water Table in.
		Depth of Layer in.	Dry Density lb/cu ft	Sheargraph			Dry Density lb/cu ft	Sheargraph			Dry Density lb/cu ft	Sheargraph				
				c _u	Tan φ _u	a _{ur}		c _u	Tan φ _u	a _{ur}		c _u	Tan φ _u	a _{ur}		
76	1	0-6	73.8	44.0	30	0.49	15	—	—	—	73.8	44.0	30	0.49	15	46
		6-12	73.4	42.4	61	0.76	46	—	—	—	73.4	42.4	61	0.76	46	46
77	1	0-6	—	—	167	—	—	—	—	—	—	—	167	—	—	42
		6-12	—	—	233	—	—	—	—	—	—	—	233	—	—	42
78	1	0-6	87.0	32.0	34	0.50	17	—	—	—	87.0	32.0	34	0.50	17	—
		6-12	72.7	45.5	35	0.25	9	—	—	—	72.7	45.5	35	0.25	9	—
80	1	0-6	87.6	20.2	66	0.38	25	—	—	—	—	—	—	—	—	—
		6-12	96.4	20.1	89	0.53	47	—	—	—	—	—	—	—	—	—
81	1	0-6	89.2	17.2	107	—	—	—	—	—	—	—	—	—	—	—
		6-12	94.8	14.0	146	—	—	—	—	—	—	—	—	—	—	—
82	1	0-6	107.4	18.0	83	0.91	76	—	—	—	—	—	—	—	—	—
		6-12	108.6	15.9	103	0.51	53	—	—	—	—	—	—	—	—	—
83	1	0-6	121.7	11.0	273	—	—	—	—	—	—	—	—	—	—	—
		6-12	123.2	10.3	301	—	—	—	—	—	—	—	—	—	—	—
84	1	0-6	94.2	23.4	63	0.40	25	—	—	—	—	—	—	—	—	—
		6-12	98.2	23.8	132	0.78	103	—	—	—	—	—	—	—	—	—
85	1	0-6	88.6	33.3	8	0.52	4	—	—	—	88.6	33.3	8	0.52	4	45
		6-12	100.8	23.8	80	0.60	48	—	—	—	100.8	23.8	80	0.60	48	45
86	1	0-6	79.6	40.5	24	0.82	20	—	—	—	79.6	40.5	24	0.82	20	46
		6-12	101.4	23.0	117	0.66	77	—	—	—	101.4	23.0	117	0.66	77	46
87	1	0-6	61.8	55.0	9	0.78	7	—	—	—	61.8	55.0	9	0.78	7	46
		6-12	98.2	24.1	67	0.75	50	—	—	—	98.2	24.1	67	0.75	50	46
88	1	0-6	100.2	33.4	35	0.56	20	—	—	—	100.2	33.4	35	0.56	20	46
		6-12	98.9	25.2	134	0.59	79	—	—	—	98.9	25.2	134	0.59	79	46
89	1	0-6	81.1	35.3	90	0.71	64	—	—	—	—	—	—	—	—	—
		6-12	86.4	31.4	94	0.48	45	—	—	—	—	—	—	—	—	—
90	1	0-6	100.8	18.6	177	0.50	89	—	—	—	—	—	—	—	—	—
		6-12	106.1	16.6	139	0.57	79	—	—	—	—	—	—	—	—	—
91	1	0-6	80.8	42.2	147	—	—	—	—	—	—	—	—	—	—	—
		6-12	84.2	36.0	184	—	—	—	—	—	—	—	—	—	—	—
92	1	0-6	92.7	13.5	190	—	—	—	—	—	—	—	—	—	—	—
		6-12	103.6	15.4	213	0.92	196	—	—	—	—	—	—	—	—	—
93	1	0-6	90.2	20.4	133	0.76	101	—	—	—	—	—	—	—	—	—
		6-12	101.4	18.8	175	—	—	—	—	—	—	—	—	—	—	—
94	1	0-6	—	—	300+	—	—	—	—	—	—	—	—	—	—	—
		6-12	—	—	—	—	—	—	—	—	—	—	—	—	—	—
95	1	0-6	—	—	132	—	—	—	—	—	—	—	—	—	—	—
		6-12	—	—	116	—	—	—	—	—	—	—	—	—	—	—
96	1	0-6	89.8	28.6	15	—	—	—	—	—	89.8	28.6	15	—	—	46
		6-12	101.4	23.6	95	0.58	55	—	—	—	101.4	23.6	95	0.58	55	46
97	1	0-6	99.8	18.7	127	—	—	—	—	—	—	—	—	—	—	—
		6-12	101.7	11.0	140	—	—	—	—	—	—	—	—	—	—	—
98	1	0-6	102.4	13.7	172	—	—	—	—	—	—	—	—	—	—	—
		6-12	107.4	11.8	171	—	—	—	—	—	—	—	—	—	—	—
99	1	0-6	68.4	35.6	55	0.60	33	—	—	—	—	—	—	—	—	—
		6-12	87.0	30.6	118	0.71	84	—	—	—	—	—	—	—	—	—
100	1	0-6	93.6	12.1	219	1.52	333	—	—	—	—	—	—	—	—	—
		6-12	—	—	565+	—	—	—	—	—	—	—	—	—	—	—
101	1	0-6	105.2	2.6	230	1.44	331	—	—	—	—	—	—	—	—	—
		6-12	—	—	571+	—	—	—	—	—	—	—	—	—	—	—
102	1	0-6	98.9	17.4	243+	—	—	—	—	—	—	—	—	—	—	—
		6-12	—	—	663+	—	—	—	—	—	—	—	—	—	—	—
103	1	0-6	—	—	450+	—	—	—	—	—	—	—	—	—	—	—
		6-12	—	—	750+	—	—	—	—	—	—	—	—	—	—	—
104	1	0-6	96.4	9.9	224	—	—	—	—	—	—	—	—	—	—	—
		6-12	93.0	4.6	423	—	—	—	—	—	—	—	—	—	—	—
105	1	0-6	—	—	580+	—	—	—	—	—	—	—	—	—	—	—
		6-12	—	—	800+	—	—	—	—	—	—	—	—	—	—	—
106	1	0-6	104.2	21.9	64	0.68	44	—	—	—	104.2	21.9	64	0.68	44	46
		6-12	116.7	16.4	135	0.70	95	—	—	—	116.7	16.4	135	0.70	95	46
107	1	0-6	105.8	24.2	125	0.31	39	—	—	—	105.8	24.2	125	0.31	39	41
		6-12	—	—	20.8	191	0.62	119	—	—	—	20.8	191	0.62	119	41

(Continued)

(6 of 12 sheets)

Table A1 (Continued)

Site No.	Section A. Site Data							Section B. Soil Data											
	Map Sheet	Grid Coor- di- nates	Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA			By Wt %	Atter- berg Limits			Organic Content %	Specific Gravity		
									Sand	Silt	Clay		LL	PL	PI				
108	5456II	045705	Low	Bottomland flat	0	Short grass	Grazed	0-6 6-12	62 68	30 15	8 17	SL SL	47 37	13 24	-- --	NP NP	NH NH	0.95 0.38	-- 2.67
111	5151IV	770977	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6 6-12	9 6	39 34	52 60	C C	92 98	64 65	29 29	35 36	CH CH	1.92 0.96	-- 2.75
112	5151IV	770977	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6 6-12	11 8	36 42	53 50	SIC SIC	92 94	62 63	29 31	33 32	CH CH	4.87 2.10	2.77
113	5151IV	795940	Low	Tidal flat	0	Short weeds	Undisturbed	0-6 6-12	16 16	41 42	43 42	SIC SIC	86 95	86 82	42 38	44 44	OH OH	7.91 9.01	2.72 2.69
114	5151IV	795940	Low	Tidal flat	0	Bare	Undisturbed	0-6 6-12	5 7	45 40	50 53	SIC SIC	97 97	71 71	31 34	40 37	CH CH	4.70 4.34	2.73 2.75
118	5151IV	795940	Low	Tidal flat	0	Bare	Undisturbed	0-6 6-12	14 10	43 43	43 47	SIC SIC	92 95	91 102	36 35	55 67	OH OH	8.86 8.39	2.69 2.71
119	5151IV	795940	Low	Tidal flat	0	Bare	Undisturbed	0-6 6-12	14 10	43 43	43 47	SIC SIC	92 95	91 102	36 35	55 67	CH CH	-- --	2.69 2.71
120	5151IV	795940	Low	Tidal flat	0	Bare	Undisturbed	0-6 6-12	9 6	47 47	44 47	SIC SIC	96 96	64 78	30 32	34 46	CH CH	4.05 4.15	2.75 2.75
121	5151IV	795940	Low	Tidal flat	0	Mangrove	Undisturbed	0-6 6-12	6 9	46 54	48 37	SIC SICL	96 96	88 99	35 34	53 65	OH OH	10.48 8.32	2.71 2.75
122	5151IV	795940	Low	Tidal flat	0	Short weeds	Undisturbed	0-6 6-12	10 6	43 41	47 53	SIC SIC	95 95	82 82	35 33	47 49	OH OH	8.01 --	2.76 2.75
123	5151IV	795940	Low	Tidal flat	0	Bare	Undisturbed	0-6 6-12	7 7	46 45	47 48	SIC SIC	96 94	68 77	30 32	38 45	CH CH	2.40 4.60	2.76 2.75
124	5151IV	795940	Low	Tidal flat	0	Bare	Undisturbed	0-6 6-12	7 7	46 45	47 48	SIC SIC	96 94	68 77	30 32	38 45	CH CH	-- --	2.76 2.75
125	5151IV	795940	Low	Tidal flat	0	Bare	Undisturbed	0-6 6-12	9 11	39 43	52 46	C SIC	98 93	76 79	34 33	42 46	CH CH	2.48 2.20	2.74 2.73
126A	5556III	328777	High	Upland flat	3.5	Open forest and grass	Undisturbed	0-6 6-12	82 81	13 13	5 6	LS LS	28 28	-- 13	-- 13	-- 0	NH NH	0.95 --	-- 2.63
126B	5556III	331779	High	Lower slope	2	Heavy brush	Undisturbed	0-6 6-12	94 90	4 7	2 3	S S	13 24	-- 17	-- 15	-- 2	NH NH	0.46 --	2.64 --
127	5456I	253863	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6 6-12	50 48	32 27	18 25	L SCL	59 63	27 30	13 12	14 18	CL CL	1.45 0.86	-- 2.65
128	5456I	231898	Low	Bottomland flat	0	Rice	Cultivated	0-6 6-12	10 7	30 33	60 60	C C	98 97	-- 82	-- 29	-- 53	CL CH	2.35 1.65	-- 2.67
131	5456I	252950	Low	Lower slope	0	Short grass	Cultivated (idle)	0-6 6-12	81 68	13 14	6 18	GLS GLS	37 38	18 37	18 11	0 26	NH SC	0.78 0.78	-- 2.91
132	5456I	221881	Low	Lower slope	0	Short grass	Cultivated (idle)	0-6 6-12	15 18	38 30	47 52	C C	92 87	50 63	23 23	27 40	CH CH	1.98 1.33	-- 2.66
133	5456I	244940	Low	Bottomland flat	0	Rice	Cultivated	0-6 6-12	54 42	30 30	16 28	SL CL	58 65	24 43	15 13	9 30	CL CL	1.65 1.15	-- 2.68
135	5457II	258981	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6 6-12	55 52	28 29	17 19	SL L	58 62	-- 26	13 13	-- 13	CL SC	0.95 0.62	-- 2.65
136	5457II	289989	High	Lower slope	1	Brush and grass	Undisturbed	0-6 6-12	80 65	13 18	7 17	LS SL	33 43	16 25	-- 13	12 12	NH SC	0.38 0.55	-- 2.72
137	5457II	299993	Low	Bottomland flat	0	Rice	Cultivated	0-6 6-12	71 57	15 18	14 25	GBL QBCL	40 53	22 39	16 15	6 0	NH-SC CL	0.70 0.55	-- 3.00
138	5557III	319001	Low	Lower slope	1	Short grass	Cultivated (idle)	0-6 6-12	73 76	20 17	7 7	SL LS	40 38	-- 15	-- 15	-- 0	NH NH	0.70 0.55	-- 2.65
142	5557III	346034	Low	Bottomland flat	0	Trees	Undisturbed	0-6 6-12	82 83	15 15	3 2	LS LS	32 28	-- 16	-- 14	-- 2	NH NH	1.55 0.46	-- 2.63
145	5155IV	761409	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6 6-12	20 21	38 40	42 39	C CL	85 83	-- 60	-- 22	-- 38	CH CH	-- --	2.71
146	5557III	400065	High	Lower slope	1	Grass and brush	Undisturbed	0-6 6-12	18 15	29 27	53 58	C C	88 92	62 68	25 25	37 43	CH CH	-- --	2.64
147	5558II	680349	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6 6-12	85 78	13 15	2 7	LS LS	30 33	-- 16	-- 14	-- 2	NH NH	0.32 0.32	-- 2.66
148	5557I	680287	Low	Lower slope	1	Grass and weeds	Grazed	0-6 6-12	65 65	27 28	8 7	SL SL	53 53	19 21	18 17	1 4	ML CL-ML	1.33 --	2.66
151	5557I	676296	Low	Bottomland flat	0	Rice	Cultivated	0-6 6-12	82 83	15 15	3 2	LS LS	32 32	18 18	17 15	1 3	NH NH	0.32 0.32	-- 2.64
154	5557I	679299	Low	Bottomland flat	0	Rice	Cultivated	0-6 6-12	79 76	18 20	3 4	LS LS	40 43	-- 16	-- 16	-- 0	NH NH	0.25 0.38	-- 2.68

(Continued)

(7 of 12 sheets)

Table A1 (Continued)

Section C. Trafficability Data																					
Site No.	No. of Visits	Wet-Season Condition						High-Moisture Condition						Depth to Water Table in.							
		Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c _u psi	Tan θ _u	a _{ur}	Tan θ _{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c _u psi	Tan θ _u	a _{ur}	Tan θ _{ur}	
108	1	0-6	108.6	19.4	151	0.42	63					108.6	13.4	151	0.42	63					+1
		6-12	117.6	14.0	193	0.62	120					117.6	14.0	193	0.62	120					
111	1	0-6	88.6	37.7	53	0.80	42														
		6-12	75.5	41.7	78	0.89	69														
112	1	0-6	78.0	39.2	48	0.87	42														
		6-12	69.6	42.0	71	0.83	59														
113	1	0-6	65.8	37.2	53	0.81	43					65.8	57.2	53	0.81	43					5
		6-12	42.4	109.8	54	0.81	44					42.4	109.8	54	0.81	44					
114	1	0-6	76.4	42.2	50	0.68	34					76.4	42.2	50	0.68	34					5
		6-12	72.7	47.2	60	0.70	42					72.7	47.2	60	0.70	42					
118	1	0-6	52.1	75.6	21	0.62	13					52.1	75.6	21	0.62	13					5
		6-12	50.2	85.7	25	0.56	14					50.2	85.7	25	0.56	14					
119	1	0-6	--	--	26	0.62	16					--	--	26	0.62	16					5
		6-12	--	--	28	0.56	16					--	--	28	0.56	16					
120	1	0-6	79.2	40.3	61	0.86	52					79.2	40.3	61	0.86	52					5
		6-12	74.0	46.2	54	0.82	44					74.0	46.2	54	0.82	44					
121	1	0-6	49.9	84.4	15	0.64	10					49.9	84.4	15	0.64	10					1
		6-12	45.2	98.2	23	0.60	14					45.2	98.2	23	0.60	14					
122	1	0-6	63.0	60.6	31	0.70	22					63.0	60.6	31	0.70	22					3
		6-12	52.8	75.6	36	0.64	23					52.8	75.6	36	0.64	23					
123	1	0-6	75.8	42.9	52	0.75	39					75.8	42.9	52	0.75	39					1
		6-12	68.0	52.6	56	0.71	40					68.0	52.6	56	0.71	40					
124	1	0-6	--	--	48	0.75	36					--	--	48	0.75	36					1
		6-12	--	--	57	0.71	40					--	--	57	0.71	40					
125	1	0-6	69.9	47.8	38	0.57	22					69.9	47.8	38	0.57	22					1
		6-12	64.9	57.0	43	0.78	34					64.9	57.0	43	0.78	34					
126A	1	0-6	100.8	9.1	109	--	--														+3
		6-12	--	--	123	--	--														
126B	1	0-6	95.2	9.1	146	--	--														+1
		6-12	--	--	225	--	--														
127	1	0-6	109.2	15.8	147	0.81	119														
		6-12	103.6	16.4	185	--	--														
128	1	0-6	85.2	33.4	81	1.11	90														
		6-12	77.7	39.5	101	--	--														
131	1	0-6	116.4	17.2	184	1.52	280					116.4	17.2	184	1.52	280					+3
		6-12	112.9	20.4	311	--	--					112.9	20.4	311	--	--					
132	1	0-6	81.4	29.6	74	--	--					81.4	29.6	74	--	--					+1
		6-12	--	32.0	115	--	--					--	32.0	115	--	--					
133	1	0-6	94.2	27.9	104	0.60	62														
		6-12	99.8	22.8	263	--	--														
135	1	0-6	105.2	19.2	56	0.69	39														
		6-12	105.4	19.4	133	0.83	110														
136	1	0-6	105.8	12.2	241	--	--														
		6-12	103.6	11.8	349	--	--														
137	1	0-6	103.6	15.4	240	--	--														
		6-12	117.3	15.7	371	--	--														
138	1	0-6	100.8	17.7	206	1.58	325														
		6-12	105.2	13.3	337	1.13	301														
142	1	0-6	88.6	6.8	146	--	--														
		6-12	89.2	5.4	214	--	--														
145	1	0-6	--	48.0	42	0.75	32														
		6-12	--	46.5	79	0.78	62														
146	1	0-6	--	--	96	--	--														
		6-12	--	--	119	--	--														
147	1	0-6	--	16.9	135	1.16	157														
		6-12	--	14.3	226	--	--														
148	1	0-6	103.6	22.5	130	0.60	78					103.6	22.5</								

Table A1 (Continued)

Site No.	Section A. Site Data							Section B. Soil Data												
	Map Sheet	Grid Coor- di- nates	Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA			Type	USCS			Atter- berg Limits	Type	Organic Content %	Specific Gravity	
									Sand	Silt	Clay		By Wt %	LL	PL	PI				
155	5557IV	542170	Low	Bottomland flat	0	Rice	Cultivated	0-6 6-12	75 75	21 19	4 6	SL LS	38 38	15 16	--	NP NP	SM SM	--	--	
156	5457III	452119	Low	Bottomland flat	0	Rice	Cultivated	0-6 6-12	76 70	21 17	3 13	LS SL	42 46	17 20	17	3	SM SM	0.32 0.55	2.65	
157	5457III	456119	Low	Lower slope	1	Scattered trees; logged	Cultivated (idle)	0-6 6-12	66 47	30 32	4 21	SL L	55 65	16 31	--	NP ML	ML CL	0.38 0.62	-- 2.66	
158	5457I	238262	High	Upland flat	0	Jute	Cultivated	0-6 6-12	80 80	16 17	4 3	LS	33 35	17 18	--	NP NP	SM SM	0.55 0.38	-- 2.64	
161	5457I	321201	Low	Bottomland flat	0	Rice	Cultivated	0-6 6-12	35 43	43 34	22 23	L	87 72	29 31	19 14	10 17	CL CL	--	2.67	
162	5457I	321201	High	Upland flat	0	Short grass	Cultivated (idle)	0-6 6-12	63 67	27 23	10 10	SL	77 47	21 21	18 19	3 2	ML SM	1.05 5.32	2.65	
163	5557IV	358201	High	Upland flat	0	Jute	Cultivated	0-6 6-12	72 72	21 22	7 6	SL	47 45	20 19	--	NP NP	SM SM	1.05 --	2.62	
164	5557IV	357201	Low	Bottomland depression	0	Grass	Undisturbed	0-6 6-12	23 30	34 51	23 19	SIL	87 84	27 26	19 17	8 9	CL CL	0.78 1.45	2.63	
165	5557IV	405198	Low	Bottomland flat	0	Rice	Cultivated	0-6 6-12	43 32	42 38	15 30	L CL	70 77	23 31	14 14	9 17	CL CL	0.70 1.77	2.67	
166	5557IV	386197	Low	Bottomland flat	0	Grass and brush	Grazed	0-6 6-12	55 41	31 29	14 30	GSL GCL	53 62	20 48	16 18	4 30	CL-ML CL	1.05 0.62	2.82	
167	5557IV	390197	Low	Lower slope	1	Rice	Cultivated	0-6 6-12	35 36	46 42	19 22	L	75 74	26 30	15 15	11 15	CL CL	0.78 --	2.70	
168	5557IV	492201	Low	Bottomland flat	0	Rice	Cultivated	0-6 6-12	59 52	33 30	8 18	SL	57 60	16 24	--	NP ML	ML CL	0.62 0.38	2.68	
170	5154II	143987	High	Lower slope	15	Tall grass	Cultivated (idle)	0-6 6-12	70 65	20 22	10 13	SL	34 28	29 25	17 17	12 8	SC SC	2.21 1.82	2.65	
171	5154II	141980	High	Lower slope	52	Grass and brush	Undisturbed	0-6 6-12	50 56	36 31	14 13	L	56 52	27 17	19 16	8 1	CL ML	3.72 2.48	2.67	
172	5154II	120991	Low	Bottomland depression	0	Corn	Cultivated	0-6 6-12	58 63	29 26	13 11	SL	46 43	26 26	21 21	5 5	SM-SC	2.94 2.42	2.67	
173	5154II	112002	Low	Bottomland flat	0	Tall trees and bamboo	Undisturbed	0-6 6-12	62 60	30 31	8 9	SL	47 47	--	16	14	2	SM	2.32 1.33	2.60
174	5154II	099991	Low	Upper slope	2	Grass and brush	Grazed	0-6 6-12	-- 56	-- 33	-- 11	SL	-- 52	28 17	25 17	3 0	ML	3.28 1.65	-- 2.61	
175	5154II	076015	Low	Bottomland flat	0	Rice	Cultivated	0-6 6-12	55 43	37 44	8 13	SL	52 63	14 18	13 14	1 4	ML	1.02 1.45	2.61	
176	5154II	070021	Low	Terrace flat	0	Scattered trees	Cultivated (idle)	0-6 6-12	28 28	61 57	11 15	SIL	78 77	-- 18	-- 16	-- 2	ML	3.50 2.42	2.61	
177	5253IV	437666	Low	Terrace flat	0	Rice	Cultivated	0-6 6-12	32 30	46 45	22 25	L	80 82	-- 44	-- 22	-- 22	CL	3.14 2.87	2.67	
178	5253IV	421691	Low	Terrace flat	0	Rice	Cultivated	0-6 6-12	7 6	50 36	43 58	SIC	96 96	48 62	33 29	15 33	ML	4.92 5.18	-- 2.63	
179	5253IV	164843	Low	Bottomland flat	0	Rice	Cultivated	0-6 6-12	23 18	60 59	17 23	SIL	82 86	-- 30	-- 19	-- 11	CL	3.91 3.91	2.64	
180	5154III	733862	Low	Bottomland flat	0	Rice	Cultivated	0-6 6-12	8 5	53 52	39 43	SICL	96 96	-- 61	-- 21	-- 40	CH	4.34 3.96	2.71	
181	5254IV	168009	Low	Bottomland flat	0	Rice	Cultivated	0-6 6-12	21 22	65 57	14 21	SIL	80 82	28 28	24 20	4 8	ML	1.98 1.65	2.60	
182	5254IV	167100	Low	Bottomland flat	0	Rice	Cultivated	0-6 6-12	22 35	42 29	36 36	CL	82 82	70 70	21 21	49 49	CH	0.78 0.55	2.69	
184	5254IV	160124	Low	Bottomland flat	0	Rice	Cultivated	0-6 6-12	13 11	54 55	33 34	SICL	92 93	-- 47	-- 22	-- 25	CL	3.86 1.33	2.65	
186	5155III	650300	Low	Bottomland flat	0	Rice	Cultivated	0-6 6-12	13 18	49 43	38 39	SICL	95 93	-- 46	-- 22	-- 24	CL	3.27 --	2.69	
187	5155III	655300	Low	Bottomland depression	0	Tall trees	Undisturbed	0-6 6-12	5 4	38 38	57 58	C	97 97	-- 59	-- 27	-- 32	CH	2.75 --	2.71	
189	5155III	804351	Low	Bottomland flat	0	Grass	Village	0-6 6-12	38 27	45 46	17 27	SICL	60 76	49 48	25 25	24 23	CL	4.20 --	2.64	
190	5155III	799358	Low	Bottomland flat	0	Short grass	Cultivated (idle)	0-6 6-12	10 --	37 --	53 --	C	92 --	70 --	30 --	40 --	CH	3.00 --	2.70	
192	5155II	950398	High	Terrace flat	0	Corn	Cultivated	0-6 6-12	25 22	48 45	27 33	L	80 83	-- 44	-- 22	-- 22	CL	3.86 --	--	

(Continued)

(9 of 12 sheets)

Table A1 (Continued)

Site No.	No. of Visits	Section C. Traficability Data												Depth to Water Table in.							
		Wet-Season Condition						High-Moisture Condition													
		Depth of Layer in.	Dry Density lb/cu ft	MC. %	CI	RI	RCI	Sheargraph c_u psi	Tan β_u	σ_{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC. %	CI	RI	RCI	Sheargraph c_u psi	Tan β_u	σ_{ur} psi	Tan α_{ur}	
155	1	0-6 6-12	-- --	-- 211+	44 --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- 211+	44 --	-- --	-- --	-- --	-- --	-- --	+2	
156	1	0-6 6-12	105.2 103.9	17.6 18.2	153 198	1.24 1.14	190 226	-- --	-- --	-- --	-- --	105.2 103.9	17.6 18.2	153 198	1.24 1.14	190 226	-- --	-- --	-- --	+3	
157	1	0-6 6-12	104.5 100.8	17.4 19.6	93 173	-- --	-- --	-- --	-- --	-- --	-- --	104.5 100.8	17.4 19.6	93 173	-- --	-- --	-- --	-- --	-- --	+3	
158	1	0-6 6-12	95.2 92.0	9.8 10.2	318 270	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --		
161	1	0-6 6-12	-- --	-- 9--	89 197	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --		
162	1	0-6 6-12	108.6 107.6	15.6 18.8	64 56	0.48 0.22	31 12	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --		
163	1	0-6 6-12	90.2 --	17.0 --	127 142	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --		
164	1	0-6 6-12	91.8 95.8	23.4 22.9	122 138	0.34 0.20	41 28	-- --	-- --	-- --	-- --	91.8 95.8	23.4 22.9	122 138	0.34 0.20	41 28	-- --	-- --	-- --	-- --	+2
165	1	0-6 6-12	99.2 102.0	22.1 20.8	55 117	0.81 0.78	45 91	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --		
166	1	0-6 6-12	106.1 110.4	18.4 20.2	99 103	0.26 0.51	26 53	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --		
167	1	0-6 6-12	103.0 99.6	21.3 23.0	63 111	0.36 0.72	23 80	-- --	-- --	-- --	-- --	103.0 99.6	21.3 23.0	63 111	0.36 0.72	23 80	-- --	-- --	-- --	-- --	+6
168	1	0-6 6-12	107.0 113.9	18.4 16.0	140 204	0.90 0.64	126 131	-- --	-- --	-- --	-- --	107.0 113.9	18.4 16.0	140 204	0.90 0.64	126 131	-- --	-- --	-- --	-- --	+12
170	1	0-6 6-12	85.5 96.8	21.9 18.4	43 67	0.38 --	16 --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --		
171	1	0-6 6-12	91.4 98.9	24.9 19.8	57 118	0.64 0.33	36 39	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --		
172	1	0-6 6-12	91.1 96.7	26.4 23.8	60 68	0.34 0.12	20 8	-- --	-- --	-- --	-- --	91.1 96.7	26.4 23.8	60 68	0.34 0.12	20 8	-- --	-- --	-- --	-- --	+3
173	1	0-6 6-12	94.6 94.6	23.7 22.9	49 51	0.28 0.28	14 14	-- --	-- --	-- --	-- --	94.6 94.6	23.7 22.9	49 51	0.28 0.28	14 14	-- --	-- --	-- --	-- --	6
174	1	0-6 6-12	89.0 92.6	24.6 22.8	95 60	0.36 0.16	34 10	-- --	-- --	-- --	-- --	89.0 92.6	24.6 22.8	95 60	0.36 0.16	34 10	-- --	-- --	-- --	-- --	12
175	1	0-6 6-12	100.8 100.2	20.0 20.4	65 106	0.82 0.22	53 23	-- --	-- --	-- --	-- --	100.8 100.2	20.0 20.4	65 106	0.82 0.22	53 23	-- --	-- --	-- --	-- --	+7
176	1	0-6 6-12	90.5 100.8	25.8 20.8	127+ 300+	0.59 --	75+ --	-- --	-- --	-- --	-- --	90.5 100.8	25.8 20.8	127+ 300+	0.59 --	75+ --	-- --	-- --	-- --	-- --	+10
177	1	0-6 6-12	97.0 94.8	24.3 27.6	128 270	0.63 0.47	81 127	-- --	-- --	-- --	-- --	97.0 94.8	24.3 27.6	128 270	0.63 0.47	81 127	-- --	-- --	-- --	-- --	+3
178	1	0-6 6-12	77.4 83.6	40.5 37.2	36 124	0.44 0.84	16 104	-- --	-- --	-- --	-- --	77.4 83.6	40.5 37.2	36 124	0.44 0.84	16 104	-- --	-- --	-- --	-- --	+6
179	1	0-6 6-12	100.4 --	22.0 27.6	91 129	0.20 0.55	18 71	-- --	-- --	-- --	-- --	100.4 --	22.0 27.6	91 129	0.20 0.55	18 71	-- --	-- --	-- --	-- --	+6
180	1	0-6 6-12	83.3 85.2	33.4 32.0	99 127	0.76 0.84	75 107	-- --	-- --	-- --	-- --	83.3 85.2	33.4 32.0	99 127	0.76 0.84	75 107	-- --	-- --	-- --	-- --	+2
181	1	0-6 6-12	88.2 96.4	30.6 25.0	104 193	0.37 0.42	38 81	-- --	-- --	-- --	-- --	88.2 96.4	30.6 25.0	104 193	0.37 0.42	38 81	-- --	-- --	-- --	-- --	+12
182	1	0-6 6-12	-- --	26.8 22.0	143 295	0.66 --	94 --	-- --	-- --	-- --	-- --	-- --	26.8 22.0	143 295	0.66 --	94 --	-- --	-- --	-- --	-- --	+1
184	1	0-6 6-12	-- --	39.1 25.6	63 103	1.24 0.94	78 97	-- --	-- --	-- --	-- --	-- --	39.1 25.6	63 103	1.24 0.94	78 97	-- --	-- --	-- --	-- --	+6
186	1	0-6 6-12	88.3 --	29.3 --	173 430	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --		
187	1	0-6 6-12	-- --	33.8 --	58 117	0.90 --	52 --	-- --	-- --	-- --	-- --	-- --	33.8 --	58 117	0.90 --	52 --	-- --	-- --	-- --	-- --	+1
189	1	0-6 6-12	-- --	29.4 --	109 155	0.72 --	78 --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --		
190	1	0-6 6-12	-- --	-- --	42 65	0.98 1.00	41 65	-- --	-- --	-- --	-- --	-- --	-- --	42 65	0.98 1.00	41 65	-- --	-- --	-- --	-- --	+4
192	1</																				

Table A1 (Continued)

Site No.	Map Sheet	Location Grid Coor- dinate	Section A. Site				Vegetation	Land Use	Section B. Soil Data											
			Topog- raphy Class	Topo- graphic Position	Slope %	USDA Texture by Wt, %			Type	USCS			Atter- berg Limits	Type	Organic Content %	Specific Gravity				
						Sand	Silt	Clay		By Wt %	LL	PL	PI							
193	5155II	951381	High	Terrace flat	0	Corn		Cultivated	0-6	34	38	28	CL	70	—	—	—	1.15	—	
									6-12	36	37	27	L	68	31	17	14	CL	—	2.65
195	5155III	065317	Low	Bottomland flat	0	Rice		Cultivated	0-6	13	29	58	C	92	—	—	—	MH	4.05	—
									6-12	13	20	67	C	93	89	43	46	MH	1.77	2.71
196	5155II	911230	Low	Bottomland flat	0	Short grass		Grazed	0-6	13	41	46	SIC	93	116	44	72	CH	—	2.69
									6-12	—	—	—	—	—	—	—	—	—	—	
198	5154IV	074146	Low	Bottomland flat	0	Trees		Undisturbed	0-6	5	45	50	SIC	97	—	—	—	—	1.65	—
									6-12	7	36	57	C	97	76	25	51	CH	1.45	2.72
201	5154I	030191	Low	Bottomland flat	0	Rice		Cultivated	0-6	38	39	23	L	68	—	—	—	CL	2.75	—
									6-12	43	33	24	L	63	34	17	17	CL	1.05	2.72
202	5154II	994242	Low	Bottomland flat	0	Tapioca		Cultivated	0-6	28	45	27	CL	78	34	20	14	CL	2.87	—
									6-12	22	42	36	L	83	37	18	19	CL	1.65	2.70
206	5154I	130102	Low	Bottomland flat	0	Rice		Cultivated	0-6	12	40	48	SIC	88	—	—	—	—	—	—
									6-12	9	38	53	C	92	61	22	39	CH	—	2.75
208	5757III	390000	Low	Bottomland flat	0	Rice		Cultivated	0-6	53	39	8	SL	57	15	14	1	ML	1.65	—
									6-12	40	28	32	CL	67	38	15	23	CL	1.33	2.66
210	5557I	739230	Low	Bottomland flat	0	Rice		Cultivated	0-6	73	25	2	LS	43	—	—	—	NP	0.62	—
									6-12	75	22	3	LS	43	14	—	—	SM	0.46	2.63
211	5657IV	012111	Low	Bottomland flat	<1	Rice		Cultivated	0-6	50	42	8	L	69	21	19	2	ML	1.88	—
									6-12	42	38	20	L	70	27	15	12	CL	2.08	2.64

(Continued)

(11 of 12 sheets)

Table A1 (Concluded)

Site No.	No. of Visits	Section C. Traficability Data										Depth to Water Table in.									
		Wet-Season Condition					High-Moisture Condition														
		Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c _u psi	Tan ϕ_u	c _u ur psi	Tan ϕ_{ur}		Dry Density lb/cu ft	MC, %	CI	RI	RCI	c _u psi	Tan ϕ_u	c _u ur psi	Tan ϕ_{ur}
193	1	0-6	101.1	21.6	113	1.00	113	--	--	--	--	--	--	58.2	51	1.04	53	--	--	--	--
		6-12	--	--	205	--	--	--	--	--	--	--	--	77	0.84	65	--	--	--	--	46
195	1	0-6	--	58.2	51	1.04	53	--	--	--	--	--	--	58.2	51	1.04	53	--	--	--	--
		6-12	--	--	77	0.84	65	--	--	--	--	--	--	77	0.84	65	--	--	--	--	42
196	1	0-6	--	--	55	--	--	--	--	--	--	--	--	55	--	--	--	--	--	--	--
		6-12	--	--	67	--	--	--	--	--	--	--	--	67	--	--	--	--	--	--	--
198	1	0-6	74.2	45.6	27	0.62	17	--	--	--	--	--	--	35.2	48	--	--	--	--	--	--
		6-12	83.6	37.5	59	0.68	40	--	--	--	--	--	--	23.4	101	--	--	--	--	--	--
201	1	0-6	--	35.2	48	--	--	--	--	--	--	--	--	35.2	48	--	--	--	--	--	--
		6-12	--	23.4	101	--	--	--	--	--	--	--	--	23.4	101	--	--	--	--	--	--
202	1	0-6	94.6	24.7	60	0.66	40	--	--	--	--	--	--	99.5	19.8	147	0.36	53	--	--	--
		6-12	101.4	22.6	97	0.68	66	--	--	--	--	--	--	100.2	20.5	165	0.58	96	--	--	--
206	1	0-6	91.8	30.7	52	0.80	42	--	--	--	--	--	--	22.3	78	0.80	62	--	--	--	--
		6-12	--	--	88	0.84	74	--	--	--	--	--	--	25.9	105	0.82	86	--	--	--	--
208	1	0-6	99.5	19.8	147	0.36	53	--	--	--	--	--	--	99.5	19.8	147	0.36	53	--	--	--
		6-12	100.2	20.5	165	0.58	96	--	--	--	--	--	--	100.2	20.5	165	0.58	96	--	--	--
210	1	0-6	101.4	17.8	184	--	--	--	--	--	--	--	--	101.4	17.8	184	--	--	--	--	--
		6-12	100.5	17.8	475	--	--	--	--	--	--	--	--	100.5	17.8	475	--	--	--	--	--
211	1	0-6	--	22.3	78	0.80	62	--	--	--	--	--	--	22.3	78	0.80	62	--	--	--	--
		6-12	--	25.9	105	0.82	86	--	--	--	--	--	--	25.9	105	0.82	86	--	--	--	--

Table A2
Trafficability Classification Study
Summary of Site, Soil, and Trafficability Data

Site No.	Map Sheet	Grid Coor- dinate	Section A. SITE DATA					Depth of Layer in.	USDA			Section B. SOIL DATA					Organic Content %			
			Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation	Land Use		Texture by Wt, %			By Wt %	Atter- berg Limits			USCS Type				
									Sand	Silt	Clay		LL	FL	PI					
Nakhon Sawan Area																				
1A	5958I	955583	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 50	-- 16	-- 34	SCL	-- 52	-- 27	-- 13	-- 14	CL	0.62		
1B	5958I	957584	Low	Terrace flat	0	Low scrub savanna	Undisturbed	0-6 6-12	-- 43	-- 23	-- 34	CL	-- 61	-- 33	-- 14	-- 19	CL	0.70		
1C	5958I	950589	Low	Upland depression	0	Low scrub savanna	Undisturbed	0-6 6-12	-- 52	-- 27	-- 21	SCL	-- 58	-- 24	-- 12	-- 12	CL	1.10		
1D	5958I	950589	Low	Upland flat	0	Low scrub savanna	Undisturbed	0-6 6-12	-- 27	-- 39	-- 34	CL	-- 83	-- 33	-- 16	-- 17	CL	1.40		
2A	5958I	975562	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 49	-- 18	-- 33	SCL	-- 53	-- 36	-- 18	-- 18	CL	0.70		
2B	5958I	978563	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 48	-- 30	-- 22	L	-- 63	-- 21	-- 12	-- 9	CL	0.76		
2C	5958I	982568	Low	Terrace slope	1	Short-grass prairie	Cultivated (rice)	0-6 6-12	-- 40	-- 37	-- 23	L	-- 67	-- 23	-- 15	-- 10	CL	1.56		
2D	5958I	984570	Low	Terrace flat	0	Tall scrub savanna	Cultivated (corn, rice)	0-6 6-12	-- 16	-- 49	-- 35	SICL	-- 90	-- 29	-- 17	-- 12	CL	1.90		
2E	5958I	994588	Low	Terrace flat	0	Tall-grass prairie	Cultivated (idle)	0-6 6-12	-- 78	-- 16	-- 6	LS	-- 27	-- --	-- NP	-- SM	0.31	2.62		
3A	4958II	987476	Low	Terrace flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	-- 64	-- 22	-- 14	SL	-- 49	-- 19	-- 14	-- 5	SM-SC	0.86		
3B	4958II	993480	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	-- 43	-- 39	-- 18	L	-- 68	-- 24	-- 14	-- 10	CL	0.78		
4A	5058III	115373	Low	Natural levee	0	Short-grass prairie	Undisturbed	0-6 6-12	-- 38	-- 34	-- 28	CL	-- 70	-- 34	-- 20	-- 14	CL	0.86		
4B	5058III	115373	Low	Stream bottom	0	Short-grass prairie	Undisturbed	0-6 6-12	-- 19	-- 50	-- 31	SICL	-- 88	-- 34	-- 20	-- 14	CL	1.72		
4C	5058III	115374	Low	Natural levee	11	Short-grass prairie	Undisturbed	0-6 6-12	-- 51	-- 35	-- 14	L	-- 65	-- 21	-- 16	-- 5	CL-ME	1.24		
4D	5058III	101395	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6 6-12	-- 67	-- 23	-- 10	SL	-- 42	-- 12	-- 10	-- 2	SM	0.76		
4E	5058III	110392	Low	Terrace flat	0	Tall scrub savanna	Banana orchard	0-6 6-12	-- 70	-- 22	-- 8	SL	-- 41	-- 15	-- 14	-- 1	SM	1.24		
5A	5057IV	213215	Low	Lower slope	1	Tall scrub savanna	Cultivated (corn)	0-6 6-12	-- 31	-- 39	-- 30	CL	-- 75	-- 42	-- 24	-- 18	CL	2.90		
5B	5057IV	213214	Low	Lower slope	1	Short-grass prairie	Cultivated (corn)	0-6 6-12	-- 41	-- 33	-- 26	L	-- 69	-- 31	-- 17	-- 14	CL	2.75		
5C	5057IV	224212	High	Upper slope	13	Tall scrub savanna	Undisturbed	0-6 6-12	-- 43	-- 41	-- 16	L	-- 60	-- 27	-- 25	-- 2	ML	1.05		
5D	5057IV	227211	High	Upland flat	0	Tall scrub savanna	Undisturbed	0-6 6-12	-- 25	-- 38	-- 37	CL	-- 82	-- 43	-- 24	-- 19	CL	2.35		
5E	5057IV	233209	Low	Upland depression	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 37	-- 32	-- 31	CL	-- 68	-- 41	-- 16	-- 25	CL	1.40		
6A	5058III	207343	Low	Natural levee	0	Short-grass prairie	Undisturbed	0-6 6-12	-- 34	-- 44	-- 22	L	-- 85	-- 30	-- 20	-- 10	CL	1.40		
6B	5058III	207342	Low	Bottomland flat	0	Tall-grass prairie	Cultivated (idle)	0-6 6-12	-- 31	-- 34	-- 35	OCL	-- 52	-- 36	-- 17	-- 19	CL	1.05		
6C	5058III	207341	Low	Bottomland flat	0	Tall-grass prairie	Undisturbed	0-6 6-12	-- 21	-- 37	-- 42	C	-- 80	-- 55	-- 21	-- 34	CH	0.76		
6D	5058III	207341	High	Terrace flat	0	Tall scrub savanna	Undisturbed	0-6 6-12	-- 18	-- 42	-- 40	SICL	-- 81	-- 56	-- 20	-- 36	CH	0.46		
6E	5058III	207341	High	Lower slope	1	Tall scrub savanna	Undisturbed	0-6 6-12	-- 14	-- 30	-- 56	C	-- 86	-- 70	-- 27	-- 43	CH	1.40		
7A	5057IV	226322	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6 6-12	-- 16	-- 51	-- 33	SICL	-- 90	-- 49	-- 21	-- 28	CL	2.10		
7B	5057IV	227322	Low	Terrace slope	4	Tall scrub savanna	Coconut orchard	0-6 6-12	-- 37	-- 31	-- 32	OCL	-- 51	-- 35	-- 18	-- 17	CL	1.15		
7C	5057IV	227322	Low	Terrace flat	0	Low scrub savanna	Undisturbed	0-6 6-12	-- 33	-- 34	-- 33	CL	-- 73	-- 60	-- 28	-- 32	CH	1.10		

(Continued)

* G = gravelly; VG = very gravelly.

(1 of 16 sheets)

Table A2 (Continued)

Site No.	No. of Visits	Section C. Tackifiability Data												Depth to Water Table† in.						
		Wet-Season Condition						High-Moisture Condition												
		Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RJ	RGI	c _u psi	Tan β_u	a _{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RJ	RGI	c _u psi	Tan β_u	a _{ur} psi	Tan α_{ur}
Makbon Seven Area																				
1A	1	0-6 6-12	113.2 107.2	16.6 18.9	60 83	— 0.40	— 33	3.6 psi	0.30 °	1.4 psi	0.70 °	113.2 107.2	16.6 18.9	60 83	— 0.40	— 33	— —	— —	— —	5.0
1B	1	0-6 6-12	109.5 102.8	16.1 20.8	163 132	— 1.00	— 132	5.0 psi	0.75 °	0.8 psi	0.62 °									
1C	1	0-6 6-12	95.0 97.0	23.6 24.0	38 58	— 0.58	— 34	5.5 psi	0.75 °	0.8 psi	0.60 °	95.0 97.0	23.6 24.0	38 58	— 0.58	— 34	5.5 psi	0.75 °	0.8 psi	0.60
1D	1	0-6 6-12	96.6 89.5	23.1 26.3	208 133	— 0.63	— 84	0.7 psi	1.19 °	2.1 psi	0.31 °									
2A	1	0-6 6-12	— —	14.3 25.2	214 305	— 0.67	— 204	1.7 psi	0.53 °	0.2 psi	0.47 °									
2B	1	0-6 6-12	108.4 108.5	12.6 18.7	163 140	— 0.58	— 81	2.0 psi	0.78 °	1.9 psi	0.53 °									
2C	1	0-6 6-12	86.6 94.4	19.2 15.7	179 253	— 0.70	— 177	2.0 psi	0.78 °	0.0 psi	0.55 °									
2D	1	0-6 6-12	91.1 97.7	21.4 25.2	181 172	— 0.46	— 79	5.8 psi	0.78 °	1.0 psi	0.58 °									
2E	1	0-6 6-12	101.1 105.1	12.4 12.1	66 57	— 0.56	— 32	2.0 psi	0.51 °	0.2 psi	0.40 °									
3A	1	0-6 6-12	105.4 98.0	13.1 10.1	334 382	— 0.32	— 122	3.0 psi	0.53 °	0.0 psi	0.60 °									
3B	1	0-6 6-12	105.1 105.6	17.0 21.8	112 107	— 0.54	— 58	5.1 psi	0.51 °	0.7 psi	1.00 °									
4A	1	0-6 6-12	97.2 88.4	20.2 20.8	246 238	— 0.58	— 138	0.2 psi	0.58 °	0.8 psi	0.58 °									
4B	1	0-6 6-12	90.6 95.9	27.4 23.9	125 135	— 0.41	— 55	3.4 psi	0.36 °	1.6 psi	0.22 °	90.6 95.9	27.4 23.9	125 135	— 0.41	— 55	— —	— —	— —	12.0
4C	1	0-6 6-12	— 94.2	15.8 14.2	540+ 607+	— 1.86	— 1129+	0.0 psi	0.84 °	0.6 psi	0.23 °									
4D	1	0-6 6-12	109.2 113.8	13.8 13.3	121 87	— 0.22	— 19	0.0 psi	0.47 °	0.0 psi	0.36 °									
4E	1	0-6 6-12	107.7 94.4	13.4 12.0	146 151	— 2.05	— 310	0.0 psi	0.67 °	0.2 psi	0.40 °									
5A	1	0-6 6-12	— —	22.8 23.7	157 255	— —	— —	0.8 psi	0.65 °	0.0 psi	0.51 °									
5B	1	0-6 6-12	96.3 —	15.9 20.1	191 211	— 1.23	— 260	0.0 psi	0.45 °	0.2 psi	0.58 °									
5C	1	0-6 6-12	— —	12.3 15.8	750+ 750+	— —	— —	— —	— —	— —	— —									
5D	1	0-6 6-12	— —	12.6 14.1	705+ 750+	— —	— —	0.0 psi	0.73 °	0.0 psi	0.47 °									
5E	1	0-6 6-12	82.3 93.4	41.1 26.4	61 129	— 0.70	— 90	0.2 psi	0.09 °	0.7 psi	0.23 °									
6A	1	0-6 6-12	90.9 91.0	14.3 28.4	211 277	— 0.62	— 173	0.1 psi	0.53 °	0.0 psi	0.60 °									
6B	1	0-6 6-12	— —	26.0 23.5	269+ 693+	— —	— —	0.5 psi	0.40 °	0.2 psi	0.51 °									
6C	1	0-6 6-12	82.7 89.4	40.2 30.4	62 80	— 0.81	— 65	1.0 psi	0.49 °	0.4 psi	0.27 °									
6D	1	0-6 6-12	90.5 88.1	22.0 32.6	144 93	— 0.81	— 75	0.0 psi	0.58 °	0.0 psi	0.49 °									
6E	1	0-6 6-12	— —	29.2 35.1	154 139	— 0.94	— 131	0.0 psi	0.53 °	0.0 psi	0.34 °									
7A	1	0-6 6-12	90.2 88.1	32.5 36.5	92 96	— 0.72	— 69	2.0 psi	0.30 °	0.1 psi	0.12 °	90.2 88.1	32.5 36.5	92 96	— 0.72	— 69	2.0 psi	0.30 °	0.1 psi	+1.0
7B	1	0-6 6-12	— —	19.3 22.8	320 543+	— —	— —	0.8 psi	0.51 °	0.2 psi	0.27 °									
7C	1	0-6 6-12	— —	23.9 26.6	319 321	— —	— —	2.8 psi	0.49 °	0.7 psi	0.34 °									

(Continued)

** c_u, ultimate soil-to-soil cohesion; β_u , ultimate soil-to-soil angle of internal friction; a_{ur}, ultimate soil-to-rubber adhesion; a_{ur}, ultimate soil-to-rubber angle of friction.

† Plus (+) denotes depth of water above surface.

(2 of 16 sheets)

Table A2 (Continued)

Site No.	Section A. Site Data							Depth of Layer in.	Section B. Soil Data			Organic Content %	Specific Gravity						
	Map Sheet	Grid Coor- di- nates	Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation	Land Use		USDA			Atter- berg Limits							
									Sand	Silt	Clay	Type							
7D	5057IV	244318	High	Terrace flat	0	Woodland	Undisturbed	0-6 6-12	-- 43	-- 38	-- 19	L	-- 52	-- 39	-- 23	-- 16	CL	2.60	--
7E	5057IV	244318	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6 6-12	-- 42	-- 38	-- 20	L	-- 58	-- 28	-- 12	-- 16	CL	0.64	--
7F	5057IV	243318	Low	Bottomland depression	0	Tall-grass prairie	Undisturbed	0-6 6-12	-- 31	-- 50	-- 19	SIL	-- 66	-- 28	-- 12	-- 16	CL	0.92	--
8A	5057IV	206259	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	-- 44	-- 32	-- 24	L	-- 66	-- 30	-- 16	-- 14	CL	2.30	--
8B	5057IV	206259	Low	Terrace slope	1	Low scrub savanna	Cultivated (idle)	0-6 6-12	-- 27	-- 40	-- 33	CL	-- 82	-- 63	-- 23	-- 40	CH	3.10	--
8C	5057IV	223266	High	Upper slope	5	Low scrub savanna	Undisturbed	0-6 6-12	-- 55	-- 29	-- 16	SL	-- 48	-- 25	-- 18	-- 7	SM-SC	3.10	2.72
8D	5057IV	217268	High	Drainage ditch	0	Tall scrub woodland	Undisturbed	0-6 6-12	-- 20	-- 67	-- 13	SIL	-- 95	-- 35	-- 28	-- 7	ML	2.75	--
8E	5057IV	207264	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	-- 51	-- 30	-- 19	L	-- 57	-- 31	-- 17	-- 14	CL	4.75	--
9A	5057IV	209322	Low	Bottomland flat	0	Tall scrub savanna	Undisturbed	0-6 6-12	-- 42	-- 35	-- 23	L	-- 59	-- 43	-- 19	-- 24	CL	3.50	--
9B	5057IV	214187	Low	Bottomland depression	0	Short-grass prairie	Undisturbed	0-6 6-12	-- 48	-- 27	-- 25	VGSCL	-- 23	-- 26	-- 13	-- 13	GC	0.76	--
9C	5057IV	214187	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	-- 63	-- 24	-- 13	SL	-- 41	-- 18	-- 12	-- 6	SM-SC	0.64	--
<u>Loe Buri Area</u>																			
10A	5153IV	854741	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	-- 5	-- 43	-- 52	SIC	-- 98	-- 69	-- 26	-- 43	CH	1.60	2.72
10B	5153IV	859734	Low	Terrace flat	0	Short-grass prairie	Undisturbed	0-6 6-12	-- 15	-- 40	-- 45	SIC	-- 89	-- 55	-- 27	-- 28	CH	1.10	--
10C	5153IV	713745	Low	Bottomland depression	0	Short-grass prairie	Undisturbed	0-6 6-12	-- 12	-- 45	-- 43	SIC	-- 98	-- 55	-- 24	-- 31	CH	0.92	--
10D	5153IV	713744	Low	Terrace slope	3	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 9	-- 45	-- 46	SIC	-- 98	-- 56	-- 23	-- 33	CH	1.60	--
10E	5153IV	712744	Low	Terrace flat	0	Short-grass prairie	Lawn	0-6 6-12	-- 15	-- 43	-- 42	SIC	-- 89	-- 44	-- 26	-- 24	CL	1.10	--
11A	5154III	721871	Low	Bottomland flat	0	Short-grass prairie	Grazed	0-6 6-12	-- 9	-- 41	-- 50	SIC	-- 98	-- 70	-- 29	-- 41	CH	1.40	2.69
11B	5154III	717872	Low	Terrace flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	-- 12	-- 53	-- 35	SICL	-- 98	-- 48	-- 20	-- 28	CL	1.10	--
11C	5154III	717872	Low	Natural levee	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 18	-- 51	-- 31	SICL	-- 99	-- 42	-- 19	-- 23	CL	2.10	--
11D	5153IV	774824	Low	Bottomland flat	0	Tall-grass prairie	Cultivated (rice)	0-6 6-12	-- 8	-- 39	-- 53	C	-- 98	-- 70	-- 26	-- 44	CH	1.72	--
11E	5153IV	705724	Low	Natural levee	0	Woodland	Apple orchard	0-6 6-12	-- 5	-- 40	-- 55	SIC	-- 99	-- 67	-- 22	-- 45	CH	1.24	--
12A	5154II	939923	Low	Terrace flat	0	Tall scrub savanna	Cultivated (idle)	0-6 6-12	-- 19	-- 38	-- 43	C	-- 83	-- 54	-- 22	-- 32	CH	2.30	2.66
12B	5154II	939923	Low	Terrace flat	0	Woodland	Undisturbed	0-6 6-12	-- 14	-- 36	-- 50	C	-- 91	-- 65	-- 23	-- 42	CH	3.50	--
12C	5154II	027877	Low	Terrace flat	0	Woodland	Apple orchard	0-6 6-12	-- 16	-- 62	-- 22	SIL	-- 94	-- 39	-- 24	-- 15	CL	3.50	--
12D	5154II	025877	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 12	-- 46	-- 42	SIC	-- 94	-- 46	-- 22	-- 24	CL	2.30	--
12E	5154II	015866	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 10	-- 33	-- 37	C	-- 97	-- 88	-- 26	-- 62	CH	1.10	--
13A	5155III	873316	Low	Bottomland flat	0	Short-grass prairie	Grazed	0-6 6-12	-- 9	-- 45	-- 46	SIC	-- 93	-- 80	-- 30	-- 50	CH	2.30	2.67
13B	5155III	873317	Low	Terrace slope	3	Tall-grass prairie	Cultivated (grazed)	0-6 6-12	-- 9	-- 65	-- 26	SIL	-- 94	-- 60	-- 23	-- 37	CH	2.75	--
13C	5155III	873317	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 22	-- 55	-- 23	SIL	-- 71	-- 57	-- 27	-- 30	CH	3.10	--
13D	5155III	841331	Low	Terrace flat	0	Woodland	Coconut orchard	0-6 6-12	-- 19	-- 63	-- 18	SIL	-- 70	-- 35	-- 22	-- 13	CL	2.30	--

(Continued)

(3 of 16 sheets)

Table A2 (Continued)

Site No.	No. of Visits	Section C. Trafficability Data												Depth to Water Table in.							
		Wet-Season Condition						High-Moisture Condition													
		Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c _u psi	Tan θ _u	a _{ur}	Tan θ _{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c _u psi	Tan θ _u	a _{ur}	Tan θ _{ur}	
7D	1	0-6	--	12.6	540+	--	--	0.8	0.27	1.4	0.20										
		6-12	--	10.9	713+	--	--														
7E	1	0-6	106.8	16.3	54	--	--	0.4	0.16	0.3	0.09										
		6-12	103.6	16.5	79	0.48	38														
7F	1	0-6	104.0	19.8	132	--	--	2.2	0.23	1.0	0.22										
		6-12	110.3	17.9	271	0.48	130														
8A	1	0-6	74.3	37.6	92	--	--	0.0	0.30	0.0	0.25										
		6-12	100.2	17.9	142	1.00	142														
8B	1	0-6	--	21.0	356	--	--	0.8	0.23	1.0	0.16										
		6-12	--	22.3	382	--	--														
8C	1	0-6	--	7.9	613+	--	--	0.0	0.28	1.0	0.22										
		6-12	--	8.7	750+	--	--														
8D	1	0-6	--	7.8	600+	--	--	1.9	0.47	0.7	0.27										
		6-12	--	8.4	741+	--	--														
8E	1	0-6	107.1	17.0	85	--	--	2.0	0.18	3.4	0.12										
		6-12	83.6	32.6	127	0.74	94														
9A	1	0-6	87.4	27.9	145	--	--	0.0	0.27	0.0	0.09										
		6-12	86.6	34.5	168	0.66	111														
9B	1	0-6	--	29.5	70	--	--	0.0	0.16	0.0	0.20										
		6-12	--	12.6	430+	--	--														
9C	1	0-6	--	6.2	575+	--	--	0.0	0.40	0.0	0.25										
		6-12	--	6.8	750+	--	--														
<i>Low Permeability Areas</i>																					
10A	1	0-6	89.1	27.5	158	--	--	1.5	0.34	0.4	0.23										
		6-12	88.9	28.1	178	0.92	164														
10B	1	0-6	74.3	36.9	131	--	--	0.0	0.32	1.0	0.16										
		6-12	76.6	38.8	92	0.73	67														
10C	1	0-6	79.9	39.4	63	--	--	1.0	0.09	0.0	0.07	79.9	39.4	63	--	37	1.0	0.09	0.0	0.07	+1.0
		6-12	92.2	29.6	89	0.64	57					92.2	29.6	89	0.64	37					
10D	1	0-6	89.2	23.1	110	--	--	1.6	0.27	2.2	0.07										
		6-12	93.0	25.3	132	0.71	94														
10E	1	0-6	84.2	23.7	108	--	--	2.0	0.23	1.5	0.25										
		6-12	94.3	25.1	105	0.74	78														
11A	1	0-6	84.3	27.6	88	--	--	1.9	0.12	1.0	0.05										
		6-12	87.4	34.6	114	0.92	105														
11B	1	0-6	--	27.5	145	--	--	1.7	0.20	1.7	0.11										
		6-12	--	23.6	154	--	--														
11C	1	0-6	--	15.1	406	--	--	2.0	0.22	1.0	0.18										
		6-12	--	13.6	714+	--	--														
11D	1	0-6	77.8	38.3	54	--	--	0.0	0.18	1.0	0.09	77.8	38.3	54	--	84	0.0	0.18	1.0	0.09	+1.0
		6-12	83.5	35.0	104	0.81	84					83.5	35.0	104	0.81	84					
11E	1	0-6	88.3	27.8	125	--	--	2.6	0.12	0.5	0.18										
		6-12	89.4	30.4	124	0.72	89														
12A	1	0-6	86.0	31.9	105	--	--	0.9	0.28	0.7	0.11	86.0	31.9	105	--	74	--	--	--	--	12.0
		6-12	--	33.6	113	0.66	74					33.6	113	0.66	74	74					
12B	1	0-6	83.2	34.8	118	--	--	1.0	0.28	1.0	0.25										
		6-12	--	28.8	204	--	--														
12C	1	0-6	--	17.5	417	--	--	0.0	0.28	0.0	0.30										
		6-12	--	14.6	610+	--	--														
12D	1	0-6	92.3	24.6	134	--	--	1.2	0.32	0.2	0.22										
		6-12	81.7	38.4	65	0.82	53														
12E	1	0-6	86.8	31.0	131	--	--	1.9	0.40	1.9	0.18										
		6-12	--	35.7	137	0.91	125														
13A	1	0-6	65.3	55.2	48	--	--	0.9	0.18	0.0	0.16	65.3	55.2	48	--	78	0.9	0.18	0.0	0.16	+1.0
	</td																				

Table A2 (Continued)

Site No.	Section A. Site Data							Section B. Soil Data										
	Map Sheet	Grid Coor- di- nates	Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA			By Wt %	Atter- berg Limits			Organic Content %	Specific Gravity	
									Sand	Silt	Clay	Type	LL	PL	PI			
13E	5155III	841331	Low	Terrace slope	5	Woodland	Coconut orchard	0-6 6-12	-- 19	58	23	SIL	79	41	22	19	CL	1.72 --
14A	5155II	984265	Low	Bottomland depression	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 14	41	45	SIC	93	67	26	41	CH	1.90 2.70
14B	5155II	984265	Low	Terrace slope	2	Tall-grass prairie	Cultivated (peanut)	0-6 6-12	-- 14	43	43	SIC	91	65	26	39	CH	2.30 --
14C	5155II	983266	Low	Terrace slope	2	Tall-grass prairie	Cultivated (idle)	0-6 6-12	-- 14	43	43	SIC	92	63	23	40	CH	1.40 --
14D	5155II	957276	Low	Terrace flat 0	0	Barren	Cultivated (peanut)	0-6 6-12	-- 14	36	50	C	90	56	24	32	CH	1.65 2.73
14E	5155II	958275	Low	Terrace flat 0	0	Barren	Cultivated (peanut)	0-6 6-12	-- 23	39	38	CL	84	49	20	29	CL	1.15 --
15A	5154I	041174	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 43	41	16	L	65	29	13	16	CL	0.64 2.71
15B	5154I	041173	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 21	60	19	SIL	85	27	17	10	CL	0.92 --
15C	5154I	041172	Low	Terrace flat 0	0	Tall-grass prairie	Lawn	0-6 6-12	-- 36	40	24	L	69	37	15	22	CL	1.10 --
15D	5154I	908104	Low	Natural levee	0	Short-grass prairie	Grazed	0-6 6-12	-- 10	45	45	SIC	95	55	20	35	CH	1.10 --
15E	5154I	950126	Low	Terrace flat 0	0	Short-grass prairie	Cultivated (grazed)	0-6 6-12	-- 13	42	45	SIC	95	48	22	26	CL	1.24 --
16A	5154I	122126	Low	Natural levee	3	Savanna	Grazed	0-6 6-12	-- 50	35	15	L	71	28	22	6	CL-ML	0.78 2.66
16B	5154I	123125	Low	Terrace flat 0	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 57	28	15	SL	60	27	23	4	ML	1.10 --
16C	5154I	102074	Low	Natural levee	0	Tall scrub woodland	Banana orchard	0-6 6-12	-- 19	56	25	SIL	89	37	22	15	CL	1.72 --
16D	5154I	103076	Low	Bottomland depression	0	Short-grass prairie	Undisturbed	0-6 6-12	-- 7	35	58	C	98	62	22	40	CH	1.40 --
16E	5154I	104077	Low	Lower slope 3	3	Short-grass prairie	Grazed	0-6 6-12	-- 23	45	32	CL	86	38	21	17	CL	1.56 --
17A	5154II	038929	Low	Bottomland flat	0	Tall scrub savanna	Cultivated (idle)	0-6 6-12	-- 37	42	21	L	77	31	19	12	CL	1.24 --
17B	5154II	037931	Low	Terrace flat 0	0	Short-grass prairie	Cultivated (grazed)	0-6 6-12	-- 14	39	47	C	89	67	23	44	CH	1.56 2.73
17C	5154II	037932	Low	Lower slope 1	1	Short-grass prairie	Cultivated (grazed)	0-6 6-12	-- 17	40	43	SIC	92	59	21	38	CH	1.24 --
17D	5154II	059995	Low	Bottomland flat	0	Woodland	Undisturbed	0-6 6-12	-- 27	52	21	SIL	81	26	18	8	CL	1.40 2.73
17E	5154II	060999	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 17	74	9	SIL	92	--	--	--	ML	1.24 --
17F	5154II	060999	Low	Terrace slope	1	Barren	Cultivated (rice)	0-6 6-12	-- 17	78	5	SIL	90	--	--	--	ML	0.92 --
18A	5154II	102988	Low	Bottomland depression	0	Short-grass prairie	Undisturbed	0-6 6-12	-- 44	45	11	L	63	17	16	1	ML	1.24 2.58
18B	5154II	101989	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 39	49	12	L	72	17	16	1	ML	1.10 --
18C	5154II	101991	Low	Terrace flat 0	0	Tall-grass prairie	Lawn	0-6 6-12	-- 34	36	10	SL	54	--	--	--	ML	1.10 --
18D	5154II	081012	Low	Terrace flat 0	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 52	38	10	L	57	--	--	--	ML	1.40 --
Chama Mai Area																		
19A	4867IV	166867	Low	Bottomland depression	0	Woodland	Undisturbed	0-6 6-12	-- 80	16	4	LS	29	--	--	--	SM	0.58 --
19B	4867IV	165867	Low	Terrace flat 0	0	Woodland	Undisturbed	0-6 6-12	-- 79	16	5	LS	32	--	--	--	SM	1.04 2.63
19C	4867IV	162866	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	-- 69	13	18	SL	37	24	13	11	SC	0.39 --
19D	4867IV	161866	Low	Drainage ditch	0	Tall scrub woodland	Undisturbed	0-6 6-12	-- 55	16	29	SCL	57	35	18	17	CL	0.55 --

(Continued)

(5 of 16 sheets)

Table A2 (Continued)

Site No.	No. of Visits	Section C. Testability Data										Depth to Water Table in.									
		Wet-Season Condition					Sheargraph					High-Moisture Condition					Sheargraph				
		Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c _u psi	f _u	Tan α _{ur}	Tan α _{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c _u psi	f _u	Tan α _{ur}	Tan α _{ur}	in.
13E	1	0-6	91.5	25.7	112	--	--	1.5	0.32	1.7	0.14										
		6-12	93.8	22.9	112	0.71	80														
14A	1	0-6	81.4	36.3	30	--	--	0.4	0.22	1.2	0.09	81.4	36.3	30	--	--	0.4	0.22	1.2	0.09	+3.0
		6-12	84.6	34.6	100	0.92	92					84.6	34.6	100	0.92	92					
14B	1	0-6	83.9	32.4	58	--	--	1.2	0.22	1.6	0.14										
		6-12	85.6	30.4	133	1.16	154														
14C	1	0-6	86.8	30.5	67	--	--	2.0	0.25	1.0	0.16										
		6-12	--	79.4	151	0.82	124														
14D	1	0-6	79.1	29.0	126	--	--	0.6	0.32	1.7	0.30										
		6-12	81.0	30.5	195	0.82	160														
14E	1	0-6	88.6	25.9	97	--	--	0.4	0.45	0.0	0.28										
		6-12	91.0	23.9	190	0.76	144														
15A	1	0-6	106.8	19.0	76	--	--	0.5	0.23	0.8	0.09	106.8	19.0	76	--	--	0.5	0.23	0.8	0.09	+1.0
		6-12	103.2	20.4	115	0.51	59					103.2	20.4	115	0.51	59					
15B	1	0-6	98.9	19.5	97	--	--	0.7	0.27	0.1	0.27										
		6-12	97.0	23.1	147	0.55	81														
15C	1	0-6	93.9	31.8	125	--	--	1.6	0.28	0.4	0.30										
		6-12	106.3	19.5	143	0.88	126														
15D	1	0-6	92.7	26.6	100	--	--	1.0	0.23	0.4	0.20										
		6-12	90.6	25.2	149	0.95	142														
15E	1	0-6	89.7	29.4	90	--	--	1.8	0.23	0.0	0.32										
		6-12	92.5	26.5	147	0.93	137														
16A	1	0-6	88.7	21.5	240	--	--	1.0	0.40	0.0	0.32										
		6-12	89.4	14.0	390	0.95	370														
16B	1	0-6	93.5	19.9	237	--	--	0.0	0.49	0.0	0.30										
		6-12	92.3	15.9	356	1.07	381														
16C	1	0-6	82.8	30.3	65	--	--	1.3	0.32	0.0	0.36										
		6-12	90.5	27.0	70	0.61	43														
16D	1	0-6	88.0	28.8	55	--	--	0.0	0.18	0.0	0.12	88.0	28.8	55	--	--	0.0	0.18	0.0	0.12	+3.0
		6-12	87.6	31.5	95	0.49	46					87.6	31.5	95	0.49	46					
16E	1	0-6	94.5	21.9	244	--	--	0.1	0.51	0.0	0.22										
		6-12	91.6	25.2	201	0.68	137														
17A	1	0-6	99.4	21.3	105	--	--	0.7	0.30	0.0	0.11	99.4	21.3	105	--	--	--	--	--	--	7.0
		6-12	94.4	25.5	116	0.56	65					94.4	25.5	116	0.56	65					
17B	1	0-6	94.8	22.9	192	--	--	1.9	0.36	2.4	0.09										
		6-12	90.0	28.0	198	0.65	129														
17C	1	0-6	97.3	23.6	83	--	--	0.5	0.18	1.1	0.18	97.3	23.6	83	--	--	0.5	0.18	1.1	0.18	+1.0
		6-12	94.3	28.5	196	0.39	41					94.3	28.5	106	0.39	41					
17D	1	0-6	79.9	30.7	178	--	--	0.7	0.45	0.0	0.27										
		6-12	96.0	18.6	165	0.24	40														
17E	1	0-6	--	14.8	647	--	--	0.0	0.36	0.0	0.28										
		6-12	--	13.3	750+	--	--														
17F	1	0-6	--	43.3	437+	--	--	0.0	0.47	1.8	0.32	--	43.3	437+	--	--	0.0	0.47	1.8	0.32	+3.0
		6-12	--	21.0	750+	--	--					21.0	750+	--	--						
18A	1	0-6	97.5	19.6	221	--	--	2.0	0.22	0.0	0.25	97.5	19.6	221	--	--	--	--	--	--	9.0
		6-12	92.8	25.5	205	0.15	31					92.8	25.5	205	0.15	31					
18B	1	0-6	90.6	19.3	221	--	--	0.0	0.32	0.0	0.32										
		6-12	97.9	16.3	379	0.48	182														
18C	1	0-6	93.7	15.9	423	--	--	0.0	0.42	0.8	0.25										
		6-12	92.8	15.9	433	1.64	719														
18D	1	0-6	97.6	20.0	261	--	--	0.0	0.27	0.0	0.20	97.6	20.								

Table A2 (Continued)

Site No.	Map Sheet	Section A. Site Data						Depth of Layer, in.	Section B. Soil Data			UBCS Type	Organic Content %	Specific Gravity			
		Grid Coor- di- nates	Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation	Land Use		IMDA								
									Texture by Wt. %	Sand	Silt	Clay	Type	Fines %	LL	PL	PI
19E	4867IV	161062	High	Lower slope	3	Low scrub	Orange orchard	0-6 6-12	-- 75	21	4	-- LS	33	-- --	-- NP	SM	0.78 2.64
19F	4867IV	160062	High	Upper slope	2	Woodland	Undisturbed	0-6 6-12	-- 69	24	7	-- SL	42	-- --	-- NP	SM	-- 0.95
20A	4866IV	135458	Low	Stream bottom	0	Savanna	Undisturbed	0-6 6-12	-- 83	10	7	-- GSL	13	-- --	-- NP	SM	-- 2.10
20B	4866IV	135458	Low	Bottomland flat	0	Woodland	Undisturbed	0-6 6-12	-- 60	27	13	-- SL	47	23	18	5	SM-SC 2.50
20C	4866IV	134458	High	Terrace flat	0	Tall-grass prairie	Cultivated (peanuts)	0-6 6-12	-- 33	44	23	-- L	81	34	21	13	-- CL 2.66
20D	4866IV	131458	High	Upper slope	7	Tall-grass prairie	Grazed	0-6 6-12	-- 57	28	15	-- SL	52	16	14	2	-- ML 1.72
20E	4866IV	133458	High	Upper flat	0	Short-grass prairie	Grazed	0-6 6-12	-- 48	31	21	-- L	63	22	13	9	-- CL 1.40
20F	4866IV	133458	High	Lower slope	18	Short-grass prairie	Cultivated (pepper)	0-6 6-12	-- 57	27	16	-- SL	49	25	17	8	-- SC 2.66
21A	4867III	028793	Low	Natural levee	0	Woodland	Undisturbed	0-6 6-12	-- 66	21	13	-- SL	46	20	17	3	-- SM 1.56
21B	4867III	029794	Low	Terrace flat	0	Tall scrub savanna	Banana orchard	0-6 6-12	-- 55	27	18	-- SL	54	30	18	12	-- CL 1.40
21C	4867III	029794	Low	Terrace slope	1	Short-grass prairie	Cultivated (grazed)	0-6 6-12	-- 56	26	18	-- SL	57	28	18	10	-- CL 0.70
21D	4867III	030794	Low	Terrace slope	1	Short-grass prairie	Cultivated (grazed)	0-6 6-12	-- 58	24	18	-- SL	57	28	18	10	-- CL 0.95
21E	4867III	031795	Low	Bottomland flat	0	Tall-grass prairie	Banana orchard	0-6 6-12	-- 66	20	14	-- SL	46	24	17	7	SM-SC 0.78
21F	4867III	031795	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	-- 86	9	5	-- LS	20	--	-- NP	SM	-- 2.30
22A	4866IV	014533	Low	Natural levee	4	Tall scrub savanna	Banana Orchard	0-6 6-12	-- 40	31	29	-- CL	76	31	17	14	-- CL 1.40
22B	4866IV	015533	Low	Bottomland depression	0	Tall scrub woodland	Banana Orchard	0-6 6-12	-- 15	46	39	-- SICL	88	47	23	24	-- CL 2.30
22C	4866IV	015533	Low	Terrace slope	5	Tall scrub woodland	Apple Orchard	0-6 6-12	-- 30	40	30	-- CL	78	40	21	19	-- CL 1.90
22D	4866IV	026531	Low	Bottomland depression	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 13	53	34	-- SICL	94	33	20	13	-- CL 1.05
22E	4866IV	027530	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 12	63	25	-- SIL	91	34	22	12	-- CL 1.25
23A	4866IV	097456	Low	Bottomland flat	0	Tall-grass prairie	Cultivated (idle)	0-6 6-12	-- 34	30	36	-- CL	66	54	26	28	-- CH 2.47
23B	4866IV	097456	High	Lower slope	9	Tall scrub woodland	Undisturbed	0-6 6-12	-- 24	26	50	-- C	68	78	35	43	-- CH 2.75
23C	4866IV	096457	High	Upland flat	0	Tall scrub woodland	Undisturbed	0-6 6-12	-- 23	28	49	-- OK	63	72	35	37	-- ML 1.55
23D	4866IV	053510	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 25	44	31	-- CL	75	32	19	13	-- CL 0.95
23E	4866IV	054509	Low	Terrace slope	1	Low scrub	Banana orchard	0-6 6-12	-- 63	28	9	-- SL	48	--	-- NP	SM	-- 0.86
23F	4866IV	055509	Low	Terrace slope	1	Woodland	Undisturbed	0-6 6-12	-- 57	32	11	-- SL	54	--	-- NP	ML	-- 0.95
23G	4866IV	058507	Low	Terrace slope	1	Short-grass prairie	Cultivated (rice)	0-6 6-12	-- 61	31	8	-- SL	51	--	-- NP	ML	-- 0.78
24A	4766I	054404	Low	Bottomland flat	0	Low scrub savanna	Grazed	0-6 6-12	-- 11	55	34	-- SICL	94	42	24	18	-- CL 2.30
24B	4766I	055404	Low	Terrace slope	2	Low scrub	Grased	0-6 6-12	-- 29	46	25	-- L	79	27	18	9	-- CL 1.10
24C	4766I	055404	Low	Terrace flat	0	Low scrub	Coconut orchard	0-6 6-12	-- 33	40	27	-- L	75	33	19	14	-- CL 1.90
24D	4766I	054403	Low	Natural levee	0	Woodland	Banana orchard	0-6 6-12	-- 66	26	8	-- SL	48	--	-- NP	SM	-- 1.77
25A	4766I	092573	Low	Bottomland flat	0	Woodland	Undisturbed	0-6 6-12	-- 45	39	16	-- L	68	33	22	11	-- CL 4.30

(Continued)

(7 of 16 sheets)

Table A2 (Continued)

Site No.	No. of Visits	Section C. Tractorability Data												Depth to Water Table in.			
		Wet-Season Condition						High-Moisture Condition									
		Depth of Layer in. 0-6 6-12	Dry Density lb/cu ft 94.9 101.3	MC, % CI 11.7 15.1	RI — 0.86	RCI 169	Sheargraph c_u psi 0.0 δ_u psi 0.32	Tan ϕ_u 0.3 Tun α_u 0.27	Dry Density lb/cu ft 89.0 —	MC, % CI 19.9 11.8	RI — —	RCI —	Sheargraph c_u psi 1.0 δ_u psi 0.14	Tan ϕ_u 0.8 Tun α_u 0.20			
198	1	0-6 6-12	94.9 101.3	11.7 15.1	117 197	— 0.86	—	0.0 0.32	0.3 0.27	89.0 —	19.9 11.8	— —	—	— —	— —	2.0	
197	1	0-6 6-12	88.2 97.6	15.2 13.3	110 116	— 0.98	—	1.3 0.34	1.4 0.32	89.0 —	19.9 11.8	— —	—	— —	— —	—	
204	1	0-6 6-12	89.0 —	23.3 19.9	52 118	— —	—	1.0 0.14	0.8 0.20	89.0 —	19.9 11.8	— —	—	— —	— —	—	
208	1	0-6 6-12	85.7 94.4	22.8 14.6	118 199	— 1.01	—	0.9 0.38	0.1 0.51	89.0 —	19.9 11.8	— —	—	— —	— —	—	
206	1	0-6 6-12	90.0 93.8	24.4 23.9	100 115	— 0.56	—	1.6 0.36	0.4 0.30	89.0 —	19.9 11.8	— —	—	— —	— —	—	
209	1	0-6 6-12	92.4 104.0	26.8 17.6	116 156	— 0.32	—	0.4 0.30	0.7 0.23	89.0 —	19.9 11.8	— —	—	— —	— —	—	
202	1	0-6 6-12	95.7 105.1	17.0 16.6	116 153	— 0.60	—	0.3 0.42	0.0 0.36	89.0 —	19.9 11.8	— —	—	— —	— —	—	
207	1	0-6 6-12	94.0 99.8	15.6 16.3	207 212	— 0.67	—	1.0 0.38	0.0 0.18	89.0 —	19.9 11.8	— —	—	— —	— —	—	
21A	1	0-6 6-12	92.7 100.9	22.6 20.1	93 119	— 0.54	—	0.8 0.32	1.2 0.32	89.0 —	19.9 11.8	— —	—	— —	— —	—	
21B	1	0-6 6-12	90.1 94.6	30.4 27.4	54 90	— 0.53	—	0.9 0.09	0.5 0.05	90.1 94.6	30.4 27.4	54 90	— 0.53	— 48	0.9 0.09	0.5 0.05	+5.0
21C	1	0-6 6-12	102.6 101.3	16.6 21.5	81 117	— 0.35	—	1.0 0.18	0.1 0.18	102.6 101.3	16.6 21.5	81 117	— 0.35	— 41	1.0 0.18	0.1 0.18	+0.5
21D	1	0-6 6-12	88.0 96.3	33.1 25.6	92 123	— 0.37	—	1.5 0.16	0.6 0.14	88.0 96.3	33.1 25.6	92 123	— 0.37	— 46	1.5 0.16	0.6 0.14	+2.0
21E	1	0-6 6-12	91.9 100.6	28.0 21.9	59 142	— 0.36	—	1.5 0.34	0.3 0.30	91.9 100.6	28.0 21.9	59 142	— 0.36	— 51	1.5 0.34	0.3 0.30	0.0
21F	1	0-6 6-12	98.4 98.7	20.0 18.8	159 308	— 0.24	—	— —	— —	98.4 98.7	20.0 18.8	159 308	— 0.24	— 91	— —	— —	+6.0
22A	1	0-6 6-12	91.2 97.7	25.9 22.8	56 111	— 0.53	—	1.5 0.28	0.5 0.14	91.2 97.7	25.9 22.8	56 111	— 0.53	—	— —	— —	—
22B	1	0-6 6-12	76.9 87.5	39.4 33.4	18 48	— 0.54	—	1.0 0.18	0.4 0.18	76.9 87.5	39.4 33.4	18 48	— 0.54	— 26	1.0 0.18	0.4 0.18	+6.0
22C	1	0-6 6-12	87.1 98.5	26.2 21.5	57 84	— 0.73	—	1.7 0.38	0.7 0.20	87.1 98.5	26.2 21.5	57 84	— 0.73	—	— —	— —	—
22D	1	0-6 6-12	95.2 97.4	24.7 24.3	181 226	— 0.29	—	0.8 0.14	1.0 0.09	95.2 97.4	24.7 24.3	181 226	— 0.29	— 66	0.8 0.14	1.0 0.09	+2.0
22E	1	0-6 6-12	92.8 94.2	26.5 24.3	214 313	— 0.25	—	0.7 0.30	0.2 0.03	92.8 94.2	26.5 24.3	214 313	— 0.25	— 68	0.8 0.53	0.5 0.18	0.0
22F	1	0-6 6-12	81.8 87.5	37.3 39.2	101 157	— 0.43	—	0.8 0.53	0.5 0.18	81.8 87.5	37.3 39.2	101 157	— 0.43	— 68	0.8 0.53	0.5 0.18	0.0
23B	1	0-6 6-12	— —	34.3 37.4	137 220	— —	—	0.7 0.42	1.2 0.09	— —	— —	— —	— —	— —	— —	— —	
23C	1	0-6 6-12	— —	34.9 31.7	150 219	— —	—	1.0 0.27	1.2 0.03	— —	— —	— —	— —	— —	— —	— —	
23D	1	0-6 6-12	— —	22.9 28.6	421+ 672+	— —	—	0.3 0.45	0.0 0.18	— —	— —	— —	— —	— —	— —	— —	
23E	1	0-6 6-12	90.4 105.2	21.6 14.8	236 182	— 0.18	—	0.5 0.32	0.5 0.25	— —	— —	— —	— —	— —	— —	— —	
23F	1	0-6 6-12	98.3 98.5	15.1 21.5	95 100	— 0.18	—	0.0 0.40	0.2 0.30	— —	— —	— —	— —	— —	— —	— —	
23G	1	0-6 6-12	104.3 110.0	15.4 12.4	82 295	— 0.25	—	0.7 0.34	0.4 0.23	104.3 110.0	15.4 12.4	82 295	— 0.25	— 74	0.7 0.34	0.4 0.23	+4.0
24A	1	0-6 6-12	86.4 88.3	28.4 28.7	97 168	— 0.54	—	1.8 0.16	0.8 0.14	86.4 88.3	28.4 28.7	97 168	— 0.54	— 91	— —	— —	4.0
24B	1	0-6 6-12	89.8 —	23.6 15.0	290+ 750+	— —	—	2.0 0.16	0.0 0.18	— —	— —	— —	— —	— —	— —	— —	
24C	1	0-6 6-12	85.6 93.0	31.1 22.6	87 130	— 0.69	—	2.1 0.22	0.1 0.25	— —	— —	— —	— —	— —	— —	— —	
24D	1	0-6 6-12	85.9 84.4	15.6 20.2	93 252+	— 1.60	—	0.5 0.32	0.2 0.28	— —	— —	— —	— —	— —	— —	— —	
25A	1	0-6 6-12	77.6 79.6	29.0 14.7	71 150	— 0.93	—	1.3 0.45	0.0 0.30	— —	— —	— —	— —	— —	— —	— —	

(Continued)

(8 of 16 sheets)

Table A2 (Continued)

Site No.	Map Sheet	Grid Coor-dinates	Section A. Site Data					Depth of Layer in.	Section B. Soil Data			USCS			Organic Content %	Specific Gravity			
			Topog-raphy Class	Topo-graphic Position	Slope %	Vegetation	Land Use		USDA Texture by Wt. %			Atter-berg Limits	Type						
									Sand	Silt	Clay								
25B	4866I	891572	Low	Terrace slope	2	Tall scrub savanna	Apple orchard	0-6 6-12	-- 45	-- 33	-- 22	L	-- 66	-- 26	-- 16	-- 10	CL	0.86 2.66	
25C	4866I	889571	High	Terrace flat	0	Savanna	Grazed	0-6 6-12	-- 75	-- 18	-- 7	SL	-- 32	-- --	-- NP	-- SM	-- --	-- --	
26A	4767I	948978	Low	Bottomland flat	0	Tall scrub savanna	Cultivated (rice)	0-6 6-12	-- 55	-- 17	-- 28	SCL	-- 51	-- 25	-- 12	-- 13	CL	1.05 --	
26B	4767I	948978	Low	Terrace flat	0	Tall scrub savanna	Undisturbed	0-6 6-12	-- 43	-- 38	-- 19	L	-- 62	-- 28	-- 18	-- 10	CL	3.96 --	
26C	4767I	947978	High	Lower slope	9	Tall-grass prairie	Banana orchard	0-6 6-12	-- 76	-- 16	-- 8	SL	-- 28	-- --	-- NP	-- SM	-- --	-- --	
26D	4767I	947978	High	Upper slope	9	Tall scrub savanna	Cultivated (peanuts)	0-6 6-12	-- 77	-- 19	-- 4	LS	-- 28	-- --	-- NP	-- SM	-- 0.62	-- --	
26E	4767I	947978	High	Upland flat	0	Tall scrub woodland	Undisturbed	0-6 6-12	-- 74	-- 15	-- 11	SL	-- 31	-- --	-- NP	-- SM	-- 0.55	-- --	
27A	4767II	962791	Low	Terrace flat	0	Short-grass prairie	Grazed	0-6 6-12	-- 58	-- 25	-- 17	SL	-- 47	-- 19	-- 13	-- 6	SM-SC	0.78 --	
27B	4767II	961792	Low	Lower slope	1	Short-grass prairie	Grazed	0-6 6-12	-- 55	-- 28	-- 17	SL	-- 52	-- 22	-- 14	-- 8	CL	0.78 2.62	
27C	4767II	959793	Low	Lower slope	1	Short-grass prairie	Grazed	0-6 6-12	-- 63	-- 25	-- 12	SL	-- 42	-- 17	-- 14	-- 3	SM	1.40 --	
27D	4767II	959794	Low	Natural levee	0	Savanna	Banana orchard	0-6 6-12	-- 57	-- 24	-- 19	SL	-- 49	-- 22	-- 15	-- 7	SM-SC	1.40 --	
Chanthaburi Area																			
28A	5448IV	889951	Low	Terrace slope	2	Short-grass prairie	Grazed	0-6 6-12	-- 52	-- 22	-- 26	SCL	-- 54	-- 32	-- 14	-- 18	CL	1.72 2.66	
28B	5448IV	889952	Low	Terrace slope	2	Short-grass prairie	Grazed	0-6 6-12	-- 53	-- 24	-- 23	SCL	-- 52	-- 24	-- 15	-- 9	CL	0.78 --	
28C	5448IV	889952	Low	Terrace slope	2	Short-grass prairie	Grazed	0-6 6-12	-- 53	-- 26	-- 21	SCL	-- 51	-- 25	-- 16	-- 9	CL	1.05 --	
28D	5448IV	889953	Low	Terrace flat	0	Short-grass prairie	Grazed	0-6 6-12	-- 51	-- 24	-- 25	SCL	-- 58	-- 28	-- 17	-- 11	CL	1.88 2.66	
29A	5448IV	840933	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6 6-12	-- 37	-- 43	-- 20	L	-- 67	-- 44	-- 24	-- 20	CL	5.74 2.66	
29B	5448IV	830932	Low	Bottomland flat	0	Tall-grass prairie	Cultivated (idle)	0-6 6-12	-- 34	-- 45	-- 21	L	-- 78	-- 88	-- 33	-- 55	CH	15.00 --	
29C	5448IV	841934	Low	Bottomland flat	0	Short-grass prairie	Grazed	0-6 6-12	-- 27	-- 46	-- 27	L	-- 78	-- 34	-- 17	-- 17	CL	2.90 --	
30A	5448IV	759003	Low	Natural levee	0	Tall-grass prairie	Cultivated (idle)	0-6 6-12	-- 54	-- 19	-- 27	SCL	-- 58	-- 28	-- 16	-- 12	CL	3.10 2.62	
30B	5448IV	759004	Low	Terrace slope	2	Tall scrub woodland	Cultivated (pepper)	0-6 6-12	-- 62	-- 17	-- 21	SCL	-- 48	-- 23	-- 15	-- 8	SC	1.72 --	
30C	5448IV	759005	Low	Terrace slope	2	Woodland	Undisturbed	0-6 6-12	-- 68	-- 12	-- 20	SL	-- 41	-- 17	-- 12	-- 5	SM-SC	1.40 2.64	
30D	5448IV	759006	Low	Terrace flat	0	Woodland	Undisturbed	0-6 6-12	-- 61	-- 16	-- 22	SCL	-- 51	-- 23	-- 14	-- 9	CL	1.72 --	
31A	5349II	213078	Low	Natural levee	5	Tall scrub woodland	Undisturbed	0-6 6-12	-- 41	-- 37	-- 22	L	-- 76	-- 41	-- 25	-- 16	CL	1.40 2.66	
31B	5349II	213078	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 11	-- 57	-- 32	SICL	-- 93	-- 65	-- 33	-- 32	ME	2.30 --	
31C	5349II	212078	Low	Bottomland depression	0	Tall-grass prairie	Undisturbed	0-6 6-12	-- 17	-- 53	-- 30	SICL	-- 94	-- 55	-- 28	-- 27	CH	1.90 --	
32A	5349II	141101	Low	Terrace flat	0	Tall-grass prairie	Undisturbed	0-6 6-12	-- 68	-- 24	-- 8	SL	-- 49	-- --	-- NP	-- SM	-- 0.86	-- --	
32B	5349II	141101	Low	Lower slope	8	Tall-grass prairie	Undisturbed	0-6 6-12	-- 67	-- 22	-- 11	SL	-- 49	-- 12	-- NP	-- SM	-- 0.86	2.64	
32C	5349II	141102	Low	Upper slope	10	Low scrub savanna	Cultivated (rice)	0-6 6-12	-- 47	-- 35	-- 18	L	-- 61	-- 27	-- 16	-- 11	CL	0.86 2.65	
32D	5349II	141102	Low	Upper slope	11	Low scrub savanna	Cultivated (rice)	0-6 6-12	-- 52	-- 26	-- 22	SCL	-- 61	-- 24	-- 14	-- 10	CL	0.86 2.68	
33A	5448IV	759001	Low	Bottomland depression	0	Woodland	Rubber plantation	0-6 6-12	-- 12	-- 57	-- 31	SICL	-- 92	-- 53	-- 33	-- 20	ME	2.50 2.64	

(Continued)

(9 of 16 sheets)

Table A2 (Continued)

Section C. Trafficability Data																		
Wet-Season Condition										High-Moisture Condition								
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	Sheargraph					Dry Density lb/cu ft	Sheargraph					Depth to Water Table in.			
				c _u	Tan φ _u	q _{ur}	Tan φ _{ur}	q _{ur}		c _u	Tan φ _u	q _{ur}	Tan φ _{ur}	q _{ur}				
25B	1	0-6	99.0	20.4	85	--	--	0.8	0.30	1.1	0.22							
		6-12	106.5	17.2	136	0.67	91											
25C	1	0-6	99.6	12.9	81	--	--	1.3	0.32	0.0	0.42							
		6-12	104.0	11.7	93	0.81	75											
26A	1	0-6	--	24.7	127	--	--	--	--	--	--	--	24.7	127	--	--	+15.0	
		6-12	--	15.2	195	0.40	78						15.2	195	0.40	78		
26B	1	0-6	87.3	27.9	69	--	--	1.0	0.49	0.0	0.45	87.3	27.9	69	--		11.0	
		6-12	86.7	30.4	58	0.32	19					86.7	30.4	58	0.32	19		
26C	1	0-6	94.9	11.6	86	--	--	0.0	0.55	0.0	0.32							
		6-12	100.1	10.7	111	1.93	214											
26D	1	0-6	97.9	10.0	97	--	--	0.0	0.40	0.6	0.34							
		6-12	--	10.8	158	3.69	583											
26E	1	0-6	101.0	12.5	204	--	--	0.9	0.38	0.6	0.22							
		6-12	112.0	11.8	239	--	--											
27A	1	0-6	89.9	28.2	148	--	--	1.3	0.38	0.7	0.22							
		6-12	107.2	16.3	173	0.32	55											
27B	1	0-6	99.4	18.9	249	--	--	1.2	0.30	0.3	0.30							
		6-12	110.7	12.6	356	0.65	237											
27C	1	0-6	94.6	23.9	381	--	--	1.0	0.42	0.3	0.23							
		6-12	104.2	15.3	420	0.35	147											
27D	1	0-6	98.7	18.5	93	--	--	0.3	0.32	0.0	0.28							
		6-12	102.9	17.5	115	0.47	54											
Chesterfield Area																		
28A	1	0-6	77.4	44.7	81	--	--	1.6	0.27	0.5	0.23	77.4	44.7	81	--	--	+1.0	
		6-12	108.1	18.7	153	0.54	83					108.1	18.7	153	0.54	83		
28B	1	0-6	102.6	18.0	122	--	--	1.0	0.42	0.0	0.23	102.6	18.0	122	--	--	0.0	
		6-12	108.4	17.2	112	0.68	76					108.4	17.2	112	0.68			
28C	1	0-6	92.1	25.9	139	--	--	0.4	0.46	0.2	0.23	92.1	25.9	139	--	--	4.0	
		6-12	103.7	19.6	147	0.50	74					103.7	19.6	147	0.50	74		
28D	1	0-6	99.1	22.4	156	--	--	1.8	0.27	0.2	0.25	99.1	22.4	156	--	--	6.0	
		6-12	103.6	18.8	145	0.54	78					103.6	18.8	145	0.54	78		
29A	1	0-6	83.5	29.5	85	--	--	0.6	0.14	0.0	0.12	83.5	29.5	85	--	--	+2.0	
		6-12	79.0	37.6	93	0.38	35					79.0	37.6	93	0.38	35		
29B	1	0-6	59.6	57.7	40	--	--	--	--	--	--	59.6	57.7	40	--	--	+9.0	
		6-12	49.3	97.5	47	0.51	24					49.3	97.5	47	0.51	24		
29C	1	0-6	101.1	18.6	82	--	--	0.4	0.36	0.6	0.16	101.1	18.6	82	--	--	+2.0	
		6-12	84.1	31.5	88	0.48	42					84.1	31.5	88	0.48	42		
30A	1	0-6	89.2	22.1	67	--	--	0.3	0.25	0.2	0.18							
		6-12	94.5	21.5	103	0.49	50											
30B	1	0-6	93.8	18.4	48	--	--	1.1	0.32	0.2	0.18							
		6-12	87.4	20.5	50	0.63	32											
30C	1	0-6	95.8	21.7	99	--	--	0.0	0.34	0.0	0.27							
		6-12	98.2	16.7	91	0.46	42											
30D	1	0-6	91.0	23.6	100	--	--	0.0	0.36	0.2	0.23							
		6-12	90.9	19.1	99	0.54	53											
31A	1	0-6	77.5	38.7	54	--	--	1.0	0.20	0.2	0.28							
		6-12	82.3	32.3	69	0.52	36											
31B	1	0-6	61.2	62.1	35	--	--	0.9	0.22	1.1	0.11							
		6-12	75.1	41.3	63	0.69	43											
31C	1	0-6	62.4	58.6	26	--	--	--	--	--	--	62.4	58.6	26	--	--	+5.0	
		6-12	80.7	38.3	49	0.61	30					80.7	38.3	49	0.61	30		
32A	1	0-6	80.8	37.3	58	--	--	0.0	0.55	0.0	0.38	80.8	37.3	58	--	--	0.0	
		6-12	95.7	22.3	109	0.07	8					95.7	22.3	109	0.07	8		
32B	1	0-6	88.7	19.4	77	--	--	0.0	0.53	0.0	0.32							
		6-12	101.8	16.6	115	0.36	41											
32C	1	0-6	91.5	24.9	50	--	--	0.0	0.40	0.9	0.22							
		6-12	100.9	18.9	96	0.51	49											
32D	1	0-6	92.8	24.3	76	--	--	0.5	0.32	0.8	0.25							
		6-12	104.8	17.5	124	0.52	64											
33A	1	0-6	67.8	50.5	119	--	--	0.9	0.45	0.0	0.30	67.8	50.5	119	--	--	+6.0	
		6-12	75.3	42.5	199	0.29	58					75.3	42.5	199	0.29	58		

(Continued)

(10 of 16 sheets)

Table A2 (Continued)

Site No.	Section A. SITE DATA							Section B. SOIL DATA										
	Map Sheet	Grid Coor- dinate	Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	INDA			By Wt %	Atter- berg Limits			Organic Com- tent %	Spec- ific Gravity	
									Sand	Silt	Clay		Fines	IL	PL			
338	5448IV	761000	High	Terrace slope	3	Tall scrub savanna	Cultivated (pepper)	0-6 6-12	-- 17	44 39	39 31	SICL	87 86	56 40	43 25	13 15	NH CL	2.10 2.30
339	5448IV	762999	High	Terrace flat 0	0	Forest	Apple orchard	0-6 6-12	-- 19	46 37	37 31	SICL	-- 86	55 40	43 25	12 15	NH CL	2.30 2.64
340	5349III	951136	Low	Natural levee	0	Tall scrub savanna	Banana orchard	0-6 6-12	-- 25	48 46	27 23	L	-- 88	-- 40	-- 25	-- 15	-- CL	-- 2.30
341	5349III	951137	Low	Terrace slope	1	Short-grass prairie	Grazed	0-6 6-12	-- 46	23 31	31 46	SCL	-- 60	28 48	16 24	12 24	-- SC	-- 1.56
342	5349III	950138	Low	Terrace slope	4	Short-grass prairie	Lawn	0-6 6-12	-- 34	20 46	46 30	SCL	-- 42	48 36	24 19	14 17	-- SC	-- 1.77
343	5349III	950139	Low	Terrace slope	3	Short-grass prairie	Lawn	0-6 6-12	-- 34	19 47	47 30	SCL	-- 42	36 36	19 22	17 14	-- CL	-- 1.43
344	5349III	949139	High	Lower slope 5	5	Tall-grass prairie	Undisturbed	0-6 6-12	-- 45	32 32	23 23	L	-- 58	36 36	22 22	14 14	-- CL	-- 1.86
351	5349III	743027	Low	Bottomland flat	0	Tall scrub savanna	Fruit orchard	0-6 6-12	-- 46	38 38	16 16	L	-- 70	22 22	15 15	7 7	CL-ML	2.75 2.64
358	5349III	743028	Low	Terrace slope	4	Tall scrub savanna	Fruit orchard	0-6 6-12	-- 49	27 27	24 24	SCL	-- 67	26 26	13 13	13 13	-- CL	-- 1.10
359	5349III	743028	Low	Terrace flat 0	0	Tall scrub savanna	Fruit orchard	0-6 6-12	-- 65	28 28	7 7	SL	-- 52	12 12	12 12	0 0	ML	0.92 2.63
360	5349III	742028	Low	Lower slope 5	5	Tall scrub savanna	Fruit orchard	0-6 6-12	-- 64	27 27	9 9	SL	-- 45	14 14	-- --	NP	SH	1.40 --
361	5349III	742029	High	Upper slope 10	10	Tall scrub savanna	Fruit orchard	0-6 6-12	-- 53	25 25	22 22	SCL	-- 66	26 26	16 16	10 10	CL	1.40 --
364	5248I	570980	Low	Bottomland flat	0	Short-grass prairie	Grazed	0-6 6-12	-- 72	9 19	19 19	SL	-- 33	34 34	16 16	16 16	SC	1.77 2.59
365	5248I	570979	Low	Terrace slope	2	Low scrub savanna	Grazed	0-6 6-12	-- 92	5 3	3 3	S	-- 13	11 11	-- --	NP	SH	1.89 --
366	5248I	577979	Low	Terrace flat 0	0	Low scrub savanna	Grazed	0-6 6-12	-- 96	2 2	2 2	S	-- 9	-- --	-- --	NP	SP-SH	1.04 --
367	5248I	576979	Low	Lower slope 2	2	Short-grass prairie	Grazed	0-6 6-12	-- 97	1 2	2 2	S	-- 6	-- --	-- --	NP	SP-SH	0.63 --
368	5248I	575979	Low	Upland flat 0	0	Woodland	Grazed	0-6 6-12	-- 93	5 2	2 2	S	-- 8	-- --	-- --	NP	SP-SH	0.89 --
374	5149II	059082	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 48	26 26	26 26	SCL	-- 60	30 30	12 12	18 18	CL	0.70 2.66
375	5149II	059082	Low	Terrace slope	3	Tall scrub savanna	Coconut orchard	0-6 6-12	-- 42	32 32	26 26	L	-- 63	36 36	13 13	23 23	CL	1.33 --
376	5149II	059081	Low	Terrace flat 0	0	Tall scrub woodland	Coconut orchard	0-6 6-12	-- 58	23 19	19 19	SL	-- 46	20 20	12 12	8 8	SC	0.70 --
377	5149II	058080	Low	Terrace flat 0	0	Tall-grass prairie	Undisturbed	0-6 6-12	-- 34	41 25	25 25	L	-- 71	29 29	14 14	15 15	CL	2.10 --
From Puri Area																		
384	4947I	943509	Low	Stream bottom	0	Tall-grass prairie	Undisturbed	0-6 6-12	-- 23	51 26	26 26	SIL	-- 88	33 33	17 17	16 16	CL	2.10 2.66
385	4947I	943508	Low	Terrace slope	3	Tall scrub savanna	Coconut orchard	0-6 6-12	-- 48	35 17	17 17	L	-- 67	23 23	14 14	9 9	CL	1.56 --
386	4947I	943508	Low	Terrace slope	3	Woodland	Coconut orchard	0-6 6-12	-- 42	37 21	21 21	L	-- 71	20 20	14 14	6 6	CL-ML	1.40 --
387	4947I	943507	Low	Terrace flat 0	0	Woodland	Coconut orchard	0-6 6-12	-- 47	36 17	17 17	L	-- 70	20 20	14 14	6 6	CL-ML	1.40 --
394	4947I	937505	Low	Terrace flat 0	0	Tall scrub woodland	Cultivated (rice)	0-6 6-12	-- 57	31 12	12 12	SL	-- 58	21 21	19 19	2 2	ML	0.95 2.58
395	4947I	937505	Low	Lower slope 6	6	Tall-grass prairie	Cultivated (idle)	0-6 6-12	-- 59	27 14	14 14	SL	-- 58	20 20	18 18	2 2	ML	0.62 2.58
396	4947I	936506	High	Lower slope 6	6	Bare	Cultivated (corn)	0-6 6-12	-- 47	27 26	26 26	SCL	-- 68	27 27	15 15	12 12	CL	0.95 --
397	4947I	936506	High	Upper slope 10	10	Tall scrub woodland	Cultivated (corn)	0-6 6-12	-- 51	32 17	17 17	L	-- 67	20 20	17 17	3 3	ML	1.10 --
404	4948II	046693	Low	Natural levee	1	Tall-grass prairie	Grazed	0-6 6-12	-- 67	24 9	9 9	SL	-- 39	21 21	18 18	3 3	SH	3.90 2.64

(Continued)

(11 of 16 sheets)

Table A2 (Continued)

Site No.	No. of Visits	Section C. Irricability Data												Depth to Water Table in.							
		Wet-Season Condition						High-Moisture Condition													
		Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	NCI	c _u psi	Tan ϕ_u	c _{ur} psi	Tan ϕ_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	NCI	c _u psi	Tan ϕ_u	c _{ur} psi	Tan ϕ_{ur}	
32B	1	0-6 6-12	69.8 70.0	41.2 41.7	264 326	-- --	-- --	0.0 0.5	0.67 0.47	0.0 0.0	0.34 0.36										
33C	1	0-6 6-12	57.0 69.6	53.4 43.3	88 79	0.68 0.68	54 54	0.5 0.5	0.47 0.47	0.0 0.0	0.36 0.36										
34A	1	0-6 6-12	79.3 86.5	36.8 30.3	125 114	0.54 0.54	62 62	-- 1.2	0.18 0.18	0.7 0.7	0.07 0.07										
34B	1	0-6 6-12	96.6 96.7	21.0 19.9	112 112	0.59 0.59	66 66	-- 1.9	0.23 0.23	0.2 0.2	0.27 0.27										
34C	1	0-6 6-12	90.7 103.0	23.0 17.7	151 186	0.83 0.83	134 134	-- --	0.6 0.6	0.30 0.30	0.8 0.8	0.25 0.25									
34D	1	0-6 6-12	90.7 98.7	24.3 18.8	361 583+ 0.55	-- 321+	-- 321+	3.3 3.3	0.40 0.40	0.7 0.7	0.34 0.34										
34E	1	0-6 6-12	96.1 94.9	26.9 21.4	423+ 684+	-- --	-- --	0.2 0.2	0.47 0.47	0.0 0.0	0.30 0.30										
35A	1	0-6 6-12	92.6 97.2	23.9 20.2	71 81	0.34 0.34	28 28	0.3 0.3	0.43 0.43	0.5 0.5	0.36 0.36										
35B	1	0-6 6-12	100.5 104.7	17.6 17.7	91 105	0.73 0.73	77 77	-- --	0.0 0.0	0.58 0.58	0.0 0.0	0.30 0.30									
35C	1	0-6 6-12	90.8 92.4	17.4 16.7	86 119	0.48 0.48	57 57	-- --	0.6 0.6	0.42 0.42	0.2 0.2	0.36 0.36									
35D	1	0-6 6-12	87.7 89.4	16.1 16.0	88 114	1.28 1.28	146 146	-- --	0.4 0.4	0.40 0.40	0.3 0.3	0.27 0.27									
35E	1	0-6 6-12	92.4 100.0	19.8 18.6	62 115	0.60 0.60	69 69	-- --	1.6 1.6	0.40 0.40	1.0 1.0	0.36 0.36									
36A	1	0-6 6-12	60.3 93.0	36.6 25.3	90 119	0.47 0.47	56 56	0.4 0.4	0.20 0.20	0.0 0.0	0.23 0.23	60.3 93.0	56.6 25.3	70 119	— 0.47	— 56	0.4 0.4	0.20 0.20	0.0 0.0	0.23 0.23	+4.0
36B	1	0-6 6-12	88.2 85.1	21.3 25.5	101 117	0.38 0.38	44 44	-- 1.0	0.30 0.30	0.3 0.3	0.25 0.25	88.2 85.1	21.3 25.5	101 117	— 0.38	— 44	1.0 1.0	0.30 0.30	0.3 0.3	0.25 0.25	0.0
36C	1	0-6 6-12	78.5 96.1	31.0 20.7	91 149	0.77 0.77	115 115	-- --	0.8 0.8	0.38 0.38	0.9 0.9	0.27 0.27									
36D	1	0-6 6-12	84.5 90.0	8.1 7.0	96 206	1.13 1.13	235 235	-- --	0.0 0.0	0.36 0.36	0.0 0.0	0.27 0.27									
36E	1	0-6 6-12	85.5 88.7	13.3 9.0	107 171	0.87 0.87	149 149	-- --	1.0 1.0	0.28 0.28	0.0 0.0	0.27 0.27									
37A	1	0-6 6-12	101.0 106.7	20.3 18.2	45 96	0.57 0.57	55 55	1.0 1.0	0.11 0.11	1.0 1.0	0.27 0.27	101.0 106.7	20.3 18.2	45 96	— 0.57	— 55	1.0 1.0	0.11 0.11	1.0 1.0	0.27 0.27	0.0
37B	1	0-6 6-12	105.7 109.6	16.5 17.3	63 128	— 0.38	49 49	0.7 0.7	0.23 0.23	0.3 0.3	0.23 0.23	105.7 109.6	16.5 17.3	63 128	— 0.38	— 49	— —	— —	— —	— —	5.5
37C	1	0-6 6-12	103.2 106.9	18.1 16.8	31 68	— 0.61	41 41	-- 1.2	0.18 0.18	0.4 0.4	0.27 0.27	103.2 106.9	18.1 16.8	31 68	— 0.61	— 41	1.2 1.2	0.18 0.18	0.4 0.4	0.27 0.27	0.0
37D	1	0-6 6-12	98.1 93.1	30.1 25.0	50 81	— 0.42	34 34	0.0 0.0	0.27 0.27	0.0 0.0	0.27 0.27	98.1 93.1	30.1 25.0	50 81	— 0.42	— 34	0.0 0.0	0.27 0.27	0.0 0.0	0.27 0.27	0.0
<u>From Duri Area</u>																					
38A	1	0-6 6-12	85.0 94.5	23.6 18.5	178 172	— 0.67	115 115	1.5 1.5	0.65 0.65	0.8 0.8	0.30 0.30										
38B	1	0-6 6-12	93.9 100.1	15.0 14.4	68 95	— 0.76	72 72	0.4 0.4	0.42 0.42	0.0 0.0	0.40 0.40										
38C	1	0-6 6-12	94.7 103.8	14.1 14.1	66 118	— 0.74	87 87	0.5 0.5	0.32 0.32	0.9 0.9	0.30 0.30										
38D	1	0-6 6-12	96.4 102.5	17.3 16.9	32 73	— 0.45	33 33	0.3 0.3	0.32 0.32	0.3 0.3	0.28 0.28										
38E	1	0-6 6-12	82.4 92.2	22.7 20.2	34 49	— 0.23	11 11	0.3 0.3	0.30 0.30	0.2 0.2	0.32 0.32										
38F	1	0-6 6-12	92.5 100.8	15.6 16.2	92 106	— 0.37	39 39	0.0 0.0	0.34 0.34	0.0 0.0	0.36 0.36										
38G	1	0-6 6-12	95.2 104.3	16.3 15.1	60 65	— 0.63	71 71	0.3 0.3	0.42 0.42	0.0 0.0	0.42 0.42										
38H	1	0-6 6-12	97.4 103.1	15.6 13.3	40 79	— 0.81	64 64	0.3 0.3	0.51 0.51	0.0 0.0	0.40 0.40										
38I	1	0-6 6-12	87.9 93.0	23.5 17.4	115 143	— —	— —	0.0 0.0	0.53 0.53	0.2 0.2	0.30 0.30										

(Continued)

(12 of 16 sheets)

Table A2 (Continued)

Site No.	Map Sheet	Section A. Site Data						Section B. Soil Data											
		Location		Topog-raphy Class	Topo-graphic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA			Type	USCS			Organic Content %	Specific Gravity	
		Grid Coor-dinates								Sand	Silt	Clay		By Wt %	Fines	LL	PL	PI	
40B	4948II	046693	Low	Natural levee	1	Tall-grass prairie	Grazed	0-6 6-12	14	63	23	SIL	94	35	23	12	CL	2.66	--
40C	4948II	046692	Low	Terrace flat	0	Tall scrub savanna	Grazed	0-6 6-12	18	56	26	SIL	87	31	18	13	CL	1.56	--
40D	4948II	045691	Low	Bottomland flat	0	Tall-grass prairie	Cultivated (rice)	0-6 6-12	17	50	33	SICL	92	36	23	13	CL	3.10	--
41A	4948I	049853	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6 6-12	46	27	27	SCL	61	34	14	20	CL	0.70	--
41B	4948I	030850	Low	Terrace slope	1	Tall-grass prairie	Cultivated (grazed)	0-6 6-12	47	25	28	SCL	57	26	12	14	CL	0.86	2.66
41C	4948I	032847	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6 6-12	25	36	39	CL	78	40	16	24	CL	0.70	--
41D	4948I	033844	Low	Terrace slope	1	Barren	Undisturbed	0-6 6-12	46	28	26	L	59	26	12	14	CL	0.76	2.64
42A	4949II	038059	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	71	20	9	SL	29	--	--	NP	SM	0.28	2.63
42B	4949II	038062	Low	Terrace flat	0	Short-grass prairie	Undisturbed	0-6 6-12	63	21	16	SL	44	23	15	8	SC	0.23	2.64
42C	4949II	039066	Low	Terrace flat	0	Barren	Undisturbed	0-6 6-12	72	16	12	SL	31	15	13	2	SM	0.38	2.64
42D	4949II	040069	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	48	38	14	L	58	17	11	6	CL-ML	0.76	2.64
43A	4949II	036010	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	67	22	11	SL	41	12	12	NP	SM	0.32	--
43B	4949II	036013	Low	Terrace flat	0	Tall scrub woodland	Undisturbed	0-6 6-12	68	24	8	SL	40	12	12	NP	SM	0.76	--
43C	4949II	036017	Low	Terrace flat	0	Tall-grass prairie	Cultivated (idle)	0-6 6-12	52	30	18	L	53	17	10	7	CL-ML	0.62	--
43D	4949II	037030	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	49	33	18	L	59	17	12	5	CL-ML	0.46	--
44A	4949II	045156	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	34	32	34	CL	70	40	15	23	CL	1.40	--
44B	4949II	043156	Low	Terrace slope	1	Tall scrub savanna	Undisturbed	0-6 6-12	26	57	17	SIL	83	22	16	6	CL-ML	1.10	--
44C	4949II	041156	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6 6-12	25	44	31	CL	80	32	13	19	CL	0.92	--
44D	4949II	040155	Low	Terrace slope	1	Tall scrub savanna	Grazed	0-6 6-12	37	45	18	L	71	23	14	9	CL	1.24	--
44E	4949II	039155	Low	Terrace flat	0	Tall scrub woodland	Undisturbed	0-6 6-12	55	28	17	SL	54	20	14	6	CL-ML	0.62	--
44F	4949II	037155	Low	Terrace flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	50	34	16	L	63	22	13	9	CL	0.64	--
47A	4949II	063146	Low	Terrace flat	0	Short-grass prairie	Cultivated (grazed)	0-6 6-12	18	38	44	C	85	50	22	28	CH	2.30	--
47B	4949II	063148	Low	Terrace flat	0	Short-grass prairie	Cultivated (grazed)	0-6 6-12	21	36	43	C	83	48	22	26	CL	2.50	--
48C	4948I	040961	Low	Terrace slope	3	Short-grass prairie	Undisturbed	0-6 6-12	90	6	4	S	12	--	--	NP	SP-SM	0.46	--
48D	4948I	039961	Low	Terrace slope	1	Barren	Undisturbed	0-6 6-12	72	16	12	SL	14	14	14	NP	SM	0.95	--
Non-Kleen Area																			
49A	5460I	200433	Low	Terrace flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	64	20	16	SL	48	24	16	8	SC	0.64	2.67
49B	5460I	202432	High	Lower slope	3	Tall scrub savanna	Undisturbed	0-6 6-12	57	18	25	SCL	46	34	17	17	SC	1.10	--
49C	5460I	203431	High	Upper slope	2	Tall scrub savanna	Undisturbed	0-6 6-12	70	21	9	SL	45	16	15	1	SM	0.46	--
49D	5460I	204429	High	Upland flat	0	Tall scrub savanna	Undisturbed	0-6 6-12	78	19	3	LS	35	--	--	NP	SM	0.64	2.64
50A	5460I	235363	Low	Drainage ditch	0	Savanna	Undisturbed	0-6 6-12	95	4	1	S	5	--	--	NP	SP-SM	0.28	--

(Continued)

(13 of 16 sheets)

Table A2 (Continued)

Site No.	No. of Visits	Section C. Traficability Data												Depth to Water Table in.						
		Wet-Season Condition						High-Moisture Condition												
		Depth of Layer in.	Dry Density lb/cu ft	MC _w %	CI	RI	RCI	c _u psi	f _u	a _{ur} psi	Tan _u	Dry Density lb/cu ft	MC _w %	CI	RI	RCI	c _u psi	f _u	a _{ur} psi	Tan _u
40B	1	0-6 6-12	83.0 83.2	27.0 23.6	122 155	-- 0.67	104	0.4	0.34	0.6	0.32									
40C	1	0-6 6-12	84.9 87.6	22.0 16.5	155 345	-- --	--	0.3	0.42	0.3	0.47									
40D	1	0-6 6-12	77.1 90.1	37.4 26.0	61 91	-- 0.48	--	0.5	0.40	0.2	0.30									
41A	1	0-6 6-12	95.7 --	20.3 18.3	126 199	-- --	--	0.8	0.58	0.0	0.49									
41B	1	0-6 6-12	100.2 86.8	16.8 16.0	166 264	-- --	--	0.6	0.35	0.0	0.49									
41C	1	0-6 6-12	98.3 99.2	21.8 21.0	108 185	-- 0.58	107	1.8	0.22	0.7	0.27	98.3 99.2	21.8 21.0	108 185	-- 0.58	107	--	--	--	
41D	1	0-6 6-12	-- --	13.0 15.9	277 293	-- --	--	0.0	0.36	0.9	0.27									
42A	1	0-6 6-12	-- --	11.5 8.5	218 518+	-- --	--	0.5	0.27	0.4	0.18	-- --	11.5 8.5	218 518+	-- --	--	0.5	0.27	0.4	0.18
42B	1	0-6 6-12	-- --	6.4 6.6	212 482+	-- --	--	0.3	0.32	0.8	0.18									
42C	1	0-6 6-12	-- --	7.9 9.0	467+	-- --	--	0.0	0.51	0.0	0.32									
42D	1	0-6 6-12	-- --	16.3 12.7	228+	-- 567+	--	0.3	0.28	0.2	0.16	-- --	16.3 12.7	228+	-- 567+	--	0.3	0.28	0.2	0.16
43A	1	0-6 6-12	-- --	13.4 9.0	166 472+	-- --	--	0.5	0.34	0.2	0.28									
43B	1	0-6 6-12	-- --	6.7 7.2	193 224	-- --	--	0.0	0.49	0.7	0.36									
43C	1	0-6 6-12	104.7 108.8	14.7 15.0	113 112	-- 0.45	50	0.4	0.30	0.6	0.23	104.7 108.8	14.7 15.0	113 112	-- 0.45	50	--	--	--	9.0
43D	1	0-6 6-12	-- --	28.1 13.3	351+	-- 713+	--	0.0	0.36	0.0	0.32	-- --	28.1 13.3	351+	-- 713+	--	0.0	0.36	0.0	0.32
44A	1	0-6 6-12	98.9 100.7	22.4 22.2	93 159	-- 0.84	134	--	--	--	--	98.9 100.7	22.4 22.2	93 159	-- 0.84	134	--	--	--	+9.0
44B	1	0-6 6-12	97.9 99.0	18.8 18.3	111 244	-- 0.41	98	0.0	0.23	0.0	0.20	97.9 99.0	18.8 18.3	111 244	-- 0.41	98	0.0	0.23	0.0	0.20
44C	1	0-6 6-12	97.6 --	15.0 17.5	197 348	-- 0.53	184	0.3	0.47	0.0	0.38									
44D	1	0-6 6-12	-- --	12.4 15.4	205 269	-- --	--	1.4	0.38	0.3	0.38									
44E	1	0-6 6-12	97.6 101.5	12.1 11.7	231 236	-- 0.67	158	0.7	0.40	0.2	0.36									
44F	1	0-6 6-12	97.3 105.5	25.2 18.0	127 143	-- 0.47	67	--	--	--	--	97.3 105.5	25.2 18.0	127 143	-- 0.47	67	--	--	--	+5.0
47A	1	0-6 6-12	79.6 --	19.8 19.1	243 336	-- 1.03	346	0.0	0.53	0.5	0.36									
47B	1	0-6 6-12	-- --	19.1 22.5	313 310	-- --	--	--	--	--	--									
48C	1	0-6 6-12	98.0 97.3	3.3 4.6	387 431	-- --	--	0.6	0.32	1.7	0.23									
48D	1	0-6 6-12	94.6 90.6	6.4 6.8	403 548+	-- --	--	0.5	0.34	0.0	0.36									
<u>Khon Kaen Area</u>																				
49A	1	0-6 6-12	104.2 94.2	15.2 22.8	76 81	-- 0.51	41	0.0	0.42	0.0	0.30	104.2 94.2	15.2 22.8	76 81	-- 0.51	41	--	--	--	3.0
49B	1	0-6 6-12	100.6 96.2	19.7 23.2	99 142	-- 0.75	107	1.3	0.38	0.0	0.40									
49C	1	0-6 6-12	98.1 99.6	16.2 19.1	133 117	-- 0.48	56	0.0	0.45	0.2	0.32									
49D	1	0-6 6-12	98.7 95.1	17.0 19.8	88 89	-- 0.22	20	0.2	0.47	0.4	0.32									
50A	1	0-6 6-12	99.9 96.8	22.3 23.0	26 75	-- 0.82	62	0.8	0.20	0.5	0.12	99.9 96.8	22.3 23.0	26 75	-- 0.82	62	0.8	0.20	0.5	0.12
																			0.0	

(Continued)

(14 of 16 sheets)

Table A2 (Continued)

Site No.	Map Sheet	Grid Coor- di-nates	Section A. Site Data					Depth of Layer in.	Section B. Soil Data					USCS Type	Organic Content %	Spec- ific Gravity				
			Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation	Land Use		USDA Texture by Wt. %			Atter- berg Limits LL	Atter- berg Limits PL	Atter- berg Limits PI						
									Sand	Silt	Clay	Type	Fines %							
50B	5460I	235362	High	Lower slope	3	Woodland	Undisturbed	0-6 6-12	-- 87	-- 12	1	S	33	-- --	WP	SM	0.31			
50C	5460I	236361	High	Upper slope	2	Savanna	Undisturbed	0-6 6-12	-- 85	-- 13	2	LS	25	-- --	WP	SM	0.43			
50D	5460I	237358	High	Upland flat	0	Woodland	Undisturbed	0-6 6-12	-- 87	-- 11	2	S	26	-- --	WP	SM	0.23			
51A	5560I	673366	Low	Terrace flat	0	Tall-grass prairie	Cultivated (rice)	0-6 6-12	-- 69	-- 18	13	SL	43	18 16	2	SM	0.28 2.67			
51B	5560I	674365	High	Lower slope	4	Woodland	Undisturbed	0-6 6-12	-- 86	-- 13	1	S	28	-- --	WP	SM	0.46			
51C	5560I	675363	High	Upper slope	3	Woodland	Undisturbed	0-6 6-12	-- 82	-- 17	1	LS	36	-- --	WP	SM	0.46			
51D	5560I	676361	High	Upland flat	0	Woodland	Undisturbed	0-6 6-12	-- 86	-- 13	1	S	27	-- --	WP	SM	0.78			
52A	5560I	687288	Low	Terrace slope	1	Short-grass prairie	Cultivated (grazed)	0-6 6-12	-- 34	-- 45	21	L	80	29 17	12	CL	0.62 2.68			
52B	5560I	688285	Low	Terrace slope	2	Short-grass prairie	Cultivated (grazed)	0-6 6-12	-- 34	-- 42	24	L	79	32 16	16	CL	0.76			
52C	5560I	689281	Low	Terrace slope	2	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 44	-- 40	16	L	71	24 18	6	CL-ML	0.50			
52D	5560I	689279	Low	Terrace flat	0	Tall scrub woodland	Undisturbed	0-6 6-12	-- 58	-- 34	8	SL	36	16	--	WP	ML			
53A	5560III	425232	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 65	-- 16	19	SL	52	34 17	17	CL	1.10			
53B	5560III	427231	High	Lower slope	4	Woodland	Undisturbed	0-6 6-12	-- 79	-- 18	3	LS	37	-- --	WP	SM	0.62 2.64			
53C	5560III	428231	High	Upper slope	4	Short-grass prairie	Logged	0-6 6-12	-- 77	-- 16	7	SL	35	-- --	WP	SM	0.78			
53D	5560III	429231	High	Upper ridge	0	Savanna	Logged	0-6 6-12	-- 84	-- 14	2	LS	28	-- --	WP	SM	0.38			
53E	5560III	429230	High	Upland flat	0	Tall scrub woodland	Undisturbed	0-6 6-12	-- 84	-- 12	4	LS	32	-- --	WP	SM	0.62			
54A	5560III	534198	Low	Terrace slope	2	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 38	-- 29	33	CL	72	37 16	21	CL	0.55			
54B	5560III	530198	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 54	-- 24	22	SCL	57	32 14	18	CL	0.55			
54C	5560III	529197	Low	Terrace slope	2	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 70	-- 21	9	SL	46	16 15	1	SM	0.46			
54D	5560III	527196	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 84	-- 12	4	LS	33	-- --	WP	SM	0.38			
55A	5560III	903187	Low	Bottomland	0	Short-grass flat	Undisturbed	0-6 6-12	-- 85	-- 11	4	LS	30	-- --	WP	SM	0.55 2.64			
55B	5560III	903188	Low	Terrace slope	3	Woodland	Grased	0-6 6-12	-- 77	-- 15	8	SL	38	-- --	WP	SM	1.10			
55C	5560III	903188	Low	Terrace slope	2	Woodland	Grased	0-6 6-12	-- 83	-- 12	5	LS	31	-- --	WP	SM	0.62			
55D	5560III	904189	Low	Terrace slope	2	Tall-grass prairie	Grased	0-6 6-12	-- 80	-- 14	6	LS	37	-- --	WP	SM	1.24			
56A	5560II	749173	Low	Terrace slope	1	Short-grass prairie	Cultivated (rice)	0-6 6-12	-- 41	-- 35	24	L	68	32 17	15	CL	0.92			
56B	5560II	748173	Low	Terrace flat	0	Short-grass prairie	Lawn	0-6 6-12	-- 41	-- 35	24	L	74	32 17	15	CL	0.78			
56C	5560II	748172	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 44	-- 33	23	L	66	29 18	11	CL	1.24			
56D	5560II	747172	Low	Terrace slope	1	Short-grass prairie	Cultivated (rice)	0-6 6-12	-- 52	-- 27	21	SCL	64	27 17	10	CL	1.24			

(Continued)

(15 of 16 sheets)

Table A2 (Concluded)

Table A3
Surface Composition Study
Summary of Site, Soil, and Trafficality Data

Site No.	Map Sheet	Location Grid Coordinates	Section A. Site Data					Depth of Layer in.	Section B. Soil Data			USCS Type	Atterberg Limits LL	PL	PI	Organic Content %	Specific Gravity	
			Topog. Class	Topo-graphic Position	Slope %	Vegetation	Land Use		ISIDA Texture by Wt. %	By Wt %								
<u>Mahan River Area</u>																		
IT-1	5057IV	313312	Low	Bottomland flat	0	Tall scrub woodland	Undisturbed	0-6 6-12	45 45	34 34	21 21	L L	62 62	32 32	18 18	14 14	CL CL	-- --
IT-2	5058III	115380	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6 6-12	72 72	21 21	7 7	SL SL	34 34	14 14	14 14	0 0	SM SM	-- --
IT-3	4958I	935603	Low	Bottomland flat	0	Tall scrub savanna	Undisturbed	0-6 6-12	43 43	40 40	17 17	L L	65 65	30 30	17 17	13 13	CL CL	-- --
IT-4	4958I	830660	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6 6-12	74 59	14 19	12 22	SL SCL	31 45	-- 18	20 10	8 8	NP SC	-- --
IT-5	5058III	190350	Low	Bottomland depression	0	Tall scrub woodland	Undisturbed	0-6 6-12	6 3	34 29	60 68	C C	98 99	60 63	30 30	30 33	CH CH	-- --
IT-6	5058III	145345	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6 6-12	31 26	37 44	32 30	OCL CL	60 74	35 37	20 23	15 14	CL CL	-- --
IT-7	5058III	155355	Low	Bottomland flat	0	Low scrub savanna	Undisturbed	0-6 6-12	77 66	11 16	12 18	SL SL	25 38	-- 21	20 14	7 7	NP SM-SC	-- --
IT-8	5008III	160345	Low	Bottomland flat	0	Low scrub savanna	Undisturbed	0-6 6-12	49 45	34 36	17 19	L L	61 66	28 29	21 20	7 9	CL-ML CL	-- --
IT-9	4958I	900652	Low	Bottomland depression	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	26 22	48 41	26 37	CL CL	82 84	36 50	19 21	17 29	CM CM	0.58 -- 0.55 --
IT-10	4958I	849672	Low	Bottomland flat	0	Tall scrub savanna	Undisturbed	0-6 6-12	29 28	51 50	20 22	SIL SIL	82 81	28 25	20 17	8 8	CL CL	3.06 -- 2.24 --
IT-11	5057IV	210320	Low	Bottomland flat	3	Short-grass prairie	Grased	0-6 6-12	59 49	33 34	8 17	SL L	45 52	18 25	14 15	4 10	SM CL	0.59 -- 0.90 --
IT-12	5077IV	210260	Low	Bottomland flat	2	Tall scrub savanna	Cultivated (idle)	0-6 6-12	25 24	34 36	41 40	C CL	81 82	71 70	23 23	48 47	CH CH	2.81 -- 2.24 --
IT-13	5051IV	230140	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	39 36	53 54	8 10	SIL SIL	80 79	-- 23	-- 19	4 4	--- CL-ML	1.90 -- 1.49 --
IT-15	5057IV	200140	Low	Natural levee	0	Woodland	Cultivated	0-6 6-12	39 39	42 42	19 19	L L	76 76	36 36	26 26	10 10	ML ML	5.36 -- 5.36 --
IT-16	5057IV	200163	Low	Bottomland depression	2	Short-grass prairie	Cultivated (idle)	0-6 6-12	76 55	10 17	14 28	SL SCL	26 49	-- 42	-- 18	NP 24	SM SC	0.50 -- 0.96 --
IT-17	5057IV	210190	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6 6-12	37 37	36 36	27 27	L L	70 70	29 29	16 16	13 13	CL CL	1.79 -- 1.79 --
IT-18	4958II	835425	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6 6-12	80 59	14 29	6 12	LS SL	32 51	16 17	14 13	2 4	SM-ML CL-ML	0.43 -- 0.45 --
IT-19	4958II	863437	Low	Bottomland flat	0	Tall scrub savanna	Cultivated (rice)	0-6 6-12	49 49	38 38	13 13	L L	65 66	26 25	19 17	7 8	CL-ML CL	1.24 -- 0.85 --
IT-21	5057IV	261201	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6 6-12	67 60	23 27	10 13	SL SL	44 46	-- 21	-- 12	9 9	SC SC	0.93 -- 0.45 --
IT-22	5057IV	294178	Low	Bottomland flat	0	Low scrub savanna	Logged	0-6 6-12	57 57	29 29	14 14	SL SL	44 44	20 20	15 15	5 5	SM-SC SM-SC	0.77 -- 0.77 --
IT-23	5057I	576207	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	69 63	19 19	12 18	SL SL	39 45	20 23	10 12	10 11	SC SC	1.14 -- 0.59 --
IT-24	5057I	570220	Low	Bottomland flat	3	Tall scrub savanna	Undisturbed	0-6 6-12	83 78	11 10	6 12	LS SL	19 22	-- 11	-- 12	0 0	SM SM	0.55 -- 0.38 --
IT-25	5057I	520246	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6 6-12	45 46	42 40	13 14	L L	60 54	-- 25	-- 14	11 11	CL CL	1.25 -- 0.72 --
IT-26	5057I	510250	Low	Bottomland flat	0	Tall scrub savanna	Undisturbed	0-6 6-12	50 50	28 29	22 21	L L	47 46	-- 37	-- 14	23 15	SC SC	0.87 -- 0.70 --
IT-27	5057I	450235	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6 6-12	20 19	42 36	30 45	SICL C	87 88	-- 82	-- 25	-- 57	CH CH	0.23 -- 0.70 --
IT-28	5057I	350290	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6 6-12	58 57	21 20	21 23	SCL SCL	49 51	-- 34	-- 16	18 18	CL CL	0.61 -- 0.49 --
19CT- 20	4958I	909526	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6 6-12	48 30	38 32	14 38	L CL	63 78	-- 39	-- 18	21 21	CL CL	0.59 -- 0.55 --
19CT- 23	4958II	900426	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6 6-12	51 53	31 31	18 16	SL SL	58 58	-- 22	-- 15	7 7	CL-ML CL-ML	1.56 -- 0.83 --
19CT- 27	4958II	997446	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	74 56	19 17	7 27	SCL SCL	36 52	-- 28	-- 13	15 15	CL CL	0.67 -- 0.74 --

(Continued)

* G = gravelly; VG = very gravelly.

(1 of 16 sheets)

Table A3 (Continued)

Site No.	No. of Visits	Depth of Layer in.	Section C. INSTRUMENTALITY DATA								High-Moisture Condition								Depth to Water Table† in.			
			Wet-Season Condition				Shearograph**				Dry Density lb/cu ft				Shearograph**							
			M	N	G	I	R	S	P	T	M	N	G	I	R	S	P	T				
Bottom-Sum Area																						
IT-1	2	0-6	—	6.6	404	—	—	—	0.5	0.74	0.3	0.53	—	—	—	—	—	—	—			
		6-12	—	7.3	504	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
IT-2	2	0-6	—	15.9	138	—	—	—	0.6	0.46	1.2	0.40	—	—	15.9	98	—	—	1.0	0.67	0.0 0.45 +3	
		6-12	—	14.8	2704	—	—	—	—	—	—	—	—	—	—	14.8	2394	—	—	—	—	
IT-3	2	0-6	—	10.1	257	—	—	—	0.8	0.81	1.0	0.54	—	—	—	—	—	—	—	—	—	
		6-12	—	14.0	414	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
IT-4	2	0-6	—	14.3	178	—	—	202	0.9	0.78	0.3	0.49	—	—	14.3	121	—	—	0.9	0.78	0.0 0.51 +6	
		6-12	—	17.4	266	0.97	202	—	—	—	—	—	—	—	—	17.4	208	0.97	202	—	—	
IT-5	2	0-6	—	35.9	78	0.91	55	2.6	0.60	0.9	0.41	—	—	35.9	60	0.91	55	1.2	0.84	0.9 0.55 +5		
		6-12	—	24.4	208	0.69	192	—	—	—	—	—	—	—	—	24.4	278	0.69	192	—	—	
IT-6	2	0-6	—	17.4	98	0.45	46	2.4	0.70	0.4	0.62	—	—	17.4	103	0.45	46	0.9	0.73	0.9 0.65 +4		
		6-12	—	13.0	344+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
IT-7	2	0-6	—	16.3	354	—	—	—	2.8	0.34	0.7	0.49	—	—	—	—	—	—	—	—	—	
		6-12	—	12.6	470	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
IT-8	2	0-6	—	22.9	191	—	—	—	2.6	0.48	0.4	0.50	—	—	22.9	98	0.38	37	4.3	0.42	0.3 0.75 +4	
		6-12	—	9.7	390+	—	—	—	—	—	—	—	—	—	—	14.8	240	0.88	211	—	—	—
IT-9	2	0-6	—	22.0	90	0.38	37	4.3	0.42	0.3	0.75	—	—	22.0	98	0.38	37	—	—	—	—	
		6-12	—	14.8	206	0.88	211	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
IT-10	2	0-6	—	19.7	94	0.58	71	2.1	0.40	1.2	0.28	—	—	19.7	122	0.58	71	2.0	0.18	1.2 0.14 +3		
		6-12	—	18.5	122	1.12	171	—	—	—	—	—	—	—	—	18.5	153	1.12	171	—	—	—
IT-11	2	0-6	—	10.1	362+	—	—	—	1.6	0.76	0.2	0.53	—	—	—	—	—	—	—	—	—	
		6-12	—	7.9	674+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
IT-12	2	0-6	—	18.8	150	—	—	—	2.8	0.64	1.1	0.58	—	—	—	—	—	—	—	—	—	
		6-12	—	14.1	305	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
IT-13	2	0-6	—	19.9	142	—	—	—	0.7	0.50	0.8	0.35	—	—	—	—	—	—	—	—	—	
		6-12	—	17.8	276	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
IT-15	2	0-6	—	10.1	458	—	—	—	1.0	0.72	0.1	0.60	—	—	—	—	—	—	—	—	—	
		6-12	—	8.2	586	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
IT-16	2	0-6	—	25.0	294	—	—	—	2.0	0.37	0.9	0.44	—	—	—	—	—	—	—	—	—	
		6-12	—	24.3	420	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
IT-17	2	0-6	—	32.7	214	0.52	39	1.7	0.74	0.6	0.52	—	—	32.7	75	0.52	39	1.4	0.75	0.4 0.47 +4		
		6-12	—	28.2	420	0.71	227	—	—	—	—	—	—	—	—	28.2	320	0.71	227	—	—	—
IT-18	2	0-6	—	7.1	300	—	—	—	1.8	0.32	0.8	0.45	—	—	—	—	—	—	—	—	—	
		6-12	—	10.0	590+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
IT-19	1	0-6	—	—	119	—	—	—	3.2	0.14	1.0	0.42	—	—	—	—	—	—	—	—	—	
		6-12	—	—	170	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
IT-21	2	0-6	—	33.8	67	1.14	73	2.4	0.44	0.8	0.46	—	—	33.8	64	1.14	73	2.4	0.28	1.4 0.22 +3		
		6-12	—	28.4	130	0.83	131	—	—	—	—	—	—	—	—	28.4	158	0.83	131	—	—	—
IT-22	2	0-6	—	11.6	250	—	—	—	2.4	0.58	1.4	0.50	—	—	—	—	—	—	—	—	—	
		6-12	—	10.1	299+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
IT-23	2	0-6	—	4.9	412+	—	—	—	1.6	0.50	1.0	0.50	—	—	—	—	—	—	—	—	—	
		6-12	—	6.7	424+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
IT-24	2	0-6	—	2.8	444+	—	—	—	1.6	0.35	0.6	0.47	—	—	—	—	—	—	—	—	—	
		6-12	—	3.0	480+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
IT-25	2	0-6	—	25.7	58	1.49	54	3.0	0.60	1.0	0.45	—	—	25.7	36	1.49	54	1.9	0.49	1.9 0.23 +3		
		6-12</																				

Table A3 (Continued)

Site No.	Map Sheet	Section A. Site Data							Section B. Soil Data									
		Grid Coor- di- nates	Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA Texture by Wt. %			Type	Atter- berg Limits			Or- ganic Con- tent %	Spec- ific Grav- ity	
									Sand	Silt	Clay		ML	PL	LL			
18GT-30	5057IV	233146	Low	Bottomland flat	0	short-grass prairie	Cultivated (grazed)	0-6 6-12	56 40	36 46	6 14	SL	49 67	— 16	— 12	— 4	CL-ML 0.45	— 0.38
<u>Low Elevation Areas</u>																		
2T-1	5153IV	825794	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	6 6	62 62	32 32	SICL	96 96	61 61	23 23	30 30	CH	— 2.65
2T-2	5153IV	715743	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6 6-12	14 14	59 59	27 27	SICL	90 90	57 57	29 29	28 28	CH	— 2.52
2T-3	5153IV	750030	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	5 5	65 65	30 30	SICL	97 97	64 64	30 30	34 34	CH	— 2.50
2T-4	5153IV	786804	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	15 18	50 48	35 34	SICL	89 86	62 60	27 26	35 34	CH	— 2.69
2T-5	5154I	085175	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	24 24	69 69	7 7	SIL	83 83	31 31	18 18	13 13	CL	— 2.64
2T-6	5154I	100135	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	26 25	62 60	12 13	SIL	78 74	58 62	23 23	35 39	CH	— 2.74
2T-7	5154I	080117	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	24 24	66 66	10 10	SIL	83 83	40 40	18 18	22 22	CL	— 2.69
2T-8	5154I	142114	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grased)	0-6 6-12	7 8	65 53	28 39	SICL	96 94	57 61	29 29	28 32	CH	— 2.71
2T-9	5154I	040210	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grased)	0-6 6-12	25 25	65 65	10 10	SIL	82 82	36 36	21 21	15 15	CL	— 2.68
2T-10	5154I	070080	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	40 40	55 55	5 5	SIL	56 56	17 17	15 15	2 2	ML	— 2.75
2T-11	5154II	080990	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	35 39	39 35	6 6	SIL	53 49	— —	— —	— —	ML	— 2.60
2T-12	5154II	000000	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grased)	0-6 6-12	35 35	54 54	11 11	SIL	73 73	25 25	19 19	6 6	CL-ML	— 2.64
2T-13	5154II	970933	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	21 21	48 46	31 33	CL	84 83	42 43	26 25	16 18	CL	— 2.63
2T-14	5154II	000930	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	20 15	61 4	19 31	SICL	85 89	28 41	19 23	9 16	CL	— 2.68
2T-15	5154II	020675	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grased)	0-6 6-12	6 12	60 58	34 30	SICL	96 92	46 45	26 25	20 20	CL	— 2.73
2T-16	5154II	050860	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	8 8	67 67	25 25	SIL	94 94	53 53	25 25	28 28	CH	— 2.65
2T-17	5154III	850985	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grased)	0-6 6-12	12 12	69 69	19 19	SIL	96 96	45 45	22 22	23 23	CL	— 2.67
2T-18	5154III	211945	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	7 7	69 69	24 24	SIL	96 96	49 49	25 25	24 24	CL	— 2.68
2T-19	5154III	793905	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	16 16	64 64	20 20	SIL	89 89	44 44	20 20	24 24	CL	— 2.67
2T-20	5154IV	970130	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grased)	0-6 6-12	13 13	65 65	22 22	SIL	93 93	62 62	25 25	37 37	CH	— 2.59
2T-21	5155II	913260	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	39 39	51 51	10 10	SIL	70 70	59 59	32 32	27 27	ML	— 2.63
2T-22	5155II	935370	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	34 34	59 59	7 7	SIL	74 74	29 29	18 18	11 11	CL	— 2.63
2T-23	5155II	010240	Low	Bottomland depression	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	46 33	42 49	12 18	L	54 73	28 37	18 16	10 19	CL	— 2.67
2T-24	5155III	680400	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grased)	0-6 6-12	10 10	54 54	36 36	SICL	93 93	92 92	29 29	63 63	CH	— 2.56
2T-25	5155III	680380	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grased)	0-6 6-12	9 9	66 66	25 25	SICL	95 95	47 47	26 26	21 21	CL	— 2.65
2T-26	5155III	820290	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grased)	0-6 6-12	22 22	59 59	19 19	SIL	87 87	86 86	42 42	44 44	ML	— 2.58
2T-27	5155IV	780470	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6 6-12	23 23	64 64	11 11	SIL	82 82	51 51	20 20	31 31	CH	— 2.61
2T-28	5155IV	803437	Low	Bottomland flat	0	Tall-grass prairie	Undisturbed	0-6 6-12	36 36	56 56	8 8	SIL	70 70	50 50	24 24	26 26	CH	— 2.60
2T-29	5155IV	780420	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grased)	0-6 6-12	26 26	65 65	9 9	SIL	80 80	36 36	17 17	19 19	CL	— 2.57

(Continued)

(3 of 16 sheets)

Table A3 (Continued)

Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	Section C. Traficability Data								Depth to Water Table in.										
				Wet-Season Condition				Shearograph														
				ME.	% CI	RI	RCI	c _u psi	Tan °u	c _u psi	Tan °u											
1967-30	2	0-6 6-12	--	19.2	238	--	--	1.6	0.58	0.6	0.56	--	--	190	--	--	1.0	0.55	1.0	0.45	+4	
Low-Density Areas																						
2T-1	3	0-6 6-12	--	33.6	69	1.15	82	1.6	0.68	2.3	0.36	--	--	23.0	34	1.36	46	0.6	0.78	0.8	0.51	+2
2T-2	3	0-6 6-12	--	28.3	100	0.88	98	1.4	0.68	1.7	0.49	--	--	18.3	85	1.06	90	--	--	--	--	
2T-3	3	0-6 6-12	--	35.2	87	1.04	67	1.2	0.49	1.9	0.81	--	--	29.6	67	0.90	60	--	--	--	--	
2T-4	3	0-6 6-12	--	31.8	124	1.19	112	1.0	0.70	1.4	0.35	--	--	27.8	105	0.90	95	0.0	1.00	0.8	0.55	+4
2T-5	2	0-6 6-12	--	23.0	167+	1.36	46	0.6	0.78	0.8	0.51	--	--	23.0	34	1.36	46	0.6	0.78	0.8	0.51	+2
2T-6	3	0-6 6-12	--	35.2	57	1.20	40	0.5	0.84	1.6	0.42	--	--	37.7	25	1.54	39	--	--	--	--	
2T-7	3	0-6 6-12	--	29.6	98	0.90	69	0.0	1.00	0.4	0.65	--	--	35.0	30	0.73	22	0.0	1.00	0.8	0.55	+4
2T-8	2	0-6 6-12	--	74	2.95	295	1.7	0.75	1.0	0.36	--	--	100	2.95	295	1.7	0.75	0.6	0.58	+3		
2T-9	2	0-6 6-12	--	125	1.04	161	--	1.0	0.75	1.5	0.32	--	--	155	1.04	161	--	--	--	--	--	
2T-10	2	0-6 6-12	--	24.2	202	0.98	238	--	--	--	--	--	--	23.5	155	0.46	71	1.1	0.73	0.8	0.55	+3
2T-11	2	0-6 6-12	--	24.0	282	--	--	1.0	0.31	0.9	0.55	--	--	167	--	--	1.0	0.81	0.9	0.55	+6	
2T-12	2	0-6 6-12	--	19.8	402+	--	--	--	--	--	--	--	--	300+	--	--	--	--	--	--	--	
2T-13	2	0-6 6-12	--	24.1	168	0.93	105	0.3	1.08	1.2	0.66	--	--	24.1	113	0.93	105	0.3	1.08	1.2	0.73	+7
2T-14	2	0-6 6-12	--	31.2	166	1.90	228	1.1	0.84	0.8	0.67	--	--	27.6	112	--	--	0.6	0.84	0.5	0.67	+8
2T-15	2	0-6 6-12	--	31.7	238	--	--	--	--	--	--	--	--	29.6	41	1.24	51	1.0	0.73	0.8	0.62	+6
2T-16	3	0-6 6-12	--	29.6	83	0.72	62	0.7	0.70	1.2	0.43	--	--	45.6	49	0.70	34	0.7	0.70	0.8	0.58	+9
2T-17	2	0-6 6-12	--	22.1	106	1.17	81	1.6	0.62	0.9	0.53	--	--	51.2	117	0.71	83	--	--	--	--	
2T-18	2	0-6 6-12	--	39.6	55	0.84	34	1.9	0.58	1.8	0.34	--	--	27.6	265	--	--	--	--	--	--	
2T-19	2	0-6 6-12	--	48.7	55	0.97	60	--	--	--	--	--	--	26.6	116	1.07	124	1.0	0.73	0.8	0.62	+6
2T-20	3	0-6 6-12	--	26.6	140	0.90	148	0.6	0.93	0.7	0.75	--	--	31.4	71	1.7	60	1.4	0.60	1.4	0.44	
2T-21	2	0-6 6-12	--	37.6	61	1.26	71	1.7	0.60	1.4	0.44	--	--	307	1.60	184	1.9	0.50	1.3	0.36		
2T-22	2	0-6 6-12	--	30.5	207	0.78	86	--	--	--	--	--	--	256	--	--	0.9	0.84	0.4	0.56		
2T-23	3	0-6 6-12	--	29.2	109	0.80	80	1.2	0.70	0.7	0.48	--	--	27.6	85	0.77	65	1.2	0.70	1.0	0.49	
2T-24	2	0-6 6-12	--	31.6	47.8	0.81	53	2.0	0.55	1.3	0.42	--	--	47.8	79	0.72	73	--	--	--	--	
2T-25	3	0-6 6-12	--	28.6	352+	0.68	26	2.0	0.42	1.0	0.72	--	--	26.6	320+	0.99	36	--	--	--	--	
2T-26	3	0-6 6-12	--	40.3	81	1.14	84	1.2	0.57	1.5	0.36	--	--	21.6	106	0.94	106	--	--	--	--	
2T-27	2	0-6 6-12	--	25.0	88	0.69	52	1.1	0.67	0.2	0.51	--	--	21.6	160	1.16	218	--	--	--	--	
2T-28	2	0-6 6-12	--	28.0	264+	--	--	1.1	0.73	1.7	0.40	--	--	21.6	328+	--	--	--	--	--	--	
2T-29	3	0-6 6-12	--	19.6	127	0.93	42	0.8	0.73	0.7	0.52	--	--	21.3	174	0.78	111	--	--	--	--	

(Continued)

(4 of 16 sheets)

Table A3 (Continued)

Site No.	Map Sheet	Grid Coor- dinate	Section A. SITE DATA					Depth of Layer in.	Section B. SOIL DATA			Organic Content %	Specific Gravity					
			Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation	Land Use		IMDA									
									Sand	Silt	Clay	Type	Fines	Atter- berg Limits LL				
2T-30	5155IV	740480	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grased)	0-6 6-12	63 --	37 --	0 --	SL	46 --	28 --	15 --	13 --	SC --	-- 2.90
2T-31	5155IV	74C513	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grased)	0-6 6-12	40 40	50 50	10 10	SIL	67 67	29 29	15 15	14 14	CL CL	-- 2.65
2T-32	5155IV	720550	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grased)	0-6 6-12	11 11	58 57	31 32	SICL	93 92	64 61	26 31	36 30	CH CH	-- 2.56
2T-33	5155IV	830510	Low	Bottomland flat	0	Tall-grass prairie	Undisturbed	0-6 6-12	-- 75	16 9	9 SL	35 35	-- --	-- NP	-- SM	-- 0.32	--	
2T-34	5155IV	800570	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 55	30 30	15 15	SL	54 54	17 17	12 5	5 CL-ML	0.32 --	--
2T-35	5155III	788372	Low	Bottomland flat	0	Low scrub savanna	Undisturbed	0-6 6-12	-- 72	18 18	10 10	SL	38 38	-- --	-- NP	-- SM	-- 0.38	--
2T-36	5154III	734860	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	11 11	72 72	17 17	SIL	94 94	37 37	21 21	16 16	CL CL	-- 2.63
Chiang Mai Area																		
3T-1	4767I	968842	Low	Bottomland flat	2	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 73	20 20	7 7	SL	36 36	-- --	-- NP	-- SM	0 0.47	--
3T-2	4767I	950891	Low	Natural levee	3	Woodland	Banana orchard	0-6 6-12	-- 37	38 38	25 25	L	79 79	39 39	21 21	18 18	CL CL	1.05 --
3T-3	4767I	942909	Low	Bottomland flat	1	Tall scrub savanna	Banana orchard	0-6 6-12	-- 60	13 13	27 27	SCL	49 49	24 24	13 13	11 11	SC SC	0.74 --
3T-6	4867III	220700	Low	Terrace flat	1	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 65	22 22	13 13	SL	43 43	-- --	-- NP	-- SM	0.67 --	
3T-7	4867III	173702	Low	Natural levee	1	Short-grass prairie	Cultivated (grased)	0-6 6-12	-- 40	36 36	24 24	L	71 71	38 38	27 27	11 11	ML ML	1.77 --
3T-8	4767I	941909	Low	Bottomland flat	1	Tall scrub savanna	Cultivated (orchard)	0-6 6-12	-- 69	13 13	18 18	SL	39 39	24 24	18 18	6 6	SM-SC SM-SC	0.83 --
3T-9	4767I	946963	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grased)	0-6 6-12	-- 50	36 36	14 14	L	38 38	31 31	19 19	12 12	CL CL	2.29 --
3T-10	4767I	965922	Low	Natural levee	1	Short-grass prairie	Cultivated (grased)	0-6 6-12	-- 28	55 55	17 17	SIL	85 85	43 43	31 31	12 12	ML ML	2.03 --
3T-11	4867IV	049832	Low	Bottomland flat	1	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 76	15 15	9 9	SL	58 58	34 34	25 25	9 9	ML ML	0.62 --
3T-12	4867IV	027882	Low	Bottomland flat	2	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 76	20 20	4 4	LS	38 38	-- --	-- NP	-- SM	0.46 --	
3T-13	4867IV	143864	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grased)	0-6 6-12	-- 51	23 23	26 26	SCL	53 53	35 35	18 18	17 17	CL CL	0.74 --
3T-14	4867III	036800	Low	Bottomland flat	1	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 57	28 28	15 15	SL	52 52	35 35	22 22	13 13	CL CL	1.55 --
3T-16	4767II	956723	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grased)	0-6 6-12	-- 37	42 42	21 21	L	75 75	19 19	15 15	4 4	CL-ML CL-ML	0.66 --
3T-17	4767II	958718	Low	Bottomland flat	2	Short-grass prairie	Cultivated (grased)	0-6 6-12	-- 52	35 35	13 13	L	57 57	15 15	13 13	2 2	ML ML	0.42 --
3T-18	4766I	879568	Low	Bottomland depression	4	Short-grass prairie	Cultivated (grased)	0-6 6-12	-- 76	18 18	6 6	LS	37 37	-- --	-- NP	-- SM	0.51 --	
3T-19	4766III	685392	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grased)	0-6 6-12	-- 46	34 34	20 20	L	59 59	32 32	16 16	16 16	CL CL	0.74 --
3T-20	4766III	670326	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grased)	0-6 6-12	-- 81	12 12	7 7	LS	24 24	-- --	-- NP	-- SM	0.51 --	
3T-21	4766III	673283	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grased)	0-6 6-12	-- 62	20 20	18 18	SL	44 44	19 19	12 12	7 7	SM-SC SM-SC	0.70 --
3T-22	4867III	060732	Low	Bottomland flat	1	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 67	15 15	18 18	SL	38 38	23 23	17 17	6 6	SM-SC SM-SC	0.62 --
3T-23	4867III	063707	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grased)	0-6 6-12	-- 22	52 52	26 26	SIL	84 84	40 40	23 23	17 17	CL CL	1.65 --
3T-24	4867III	029674	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grased)	0-6 6-12	-- 25	44 44	31 31	CL	78 78	32 32	17 17	15 15	CL CL	0.76 --
3T-25	4866IV	022536	Low	Bottomland flat	1	Savanna	Grased	0-6 6-12	-- 40	36 36	24 24	L	72 72	28 28	17 17	11 11	CL CL	0.74 --
3T-26	4866IV	057527	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grased)	0-6 6-12	-- 58	33 33	9 9	SL	58 58	16 16	15 15	1 1	ML ML	0.63 --

(Continued)

(5 of 16 sheets)

Table A3 (Continued)

Site No.	No. of Visits	Section C. INVESTIGABILITY DATA												Depth to Water Table in.						
		Wet-Moisture Condition						High-Moisture Condition												
		Depth of Layer in.	Dry Density lb/cu ft	MC	% CI	RI	NCI	c _u psi	Tan ϕ_u	c _u psi	Tan ϕ_u	Dry Density lb/cu ft	MC	% CI	RI	NCI	c _u psi	Tan ϕ_u	c _u psi	Tan ϕ_u
2T-30	2	0-6	--	12.7	475+ 0.30	—	—	1.4	0.63	1.0	0.40									
		6-12	--	14.7	544+ 0.30	—	—													
2T-31	2	0-6	--	21.8	109	1.31	114	1.7	0.67	0.6	0.36									
		6-12	--	18.8	133	1.17	190													
2T-32	3	0-6	--	35.6	66	0.86	66	1.3	0.67	0.4	0.46									
		6-12	--	36.4	99	1.00	104													
2T-33	2	0-6	--	25.7	426	—	—	0.9	0.81	0.8	0.35									
		6-12	--	21.6	668	—	—													
2T-34	2	0-6	--	21.0	181	—	—	0.2	0.84	0.8	0.33									
		6-12	--	20.0	245	—	—													
2T-35	2	0-6	--	18.7	560	—	—	1.3	0.55	0.6	0.35									
		6-12	--	--	574+ 0.30	—	—													
2T-36	2	0-6	--	30.8	150	1.16	87	1.0	0.73	1.8	0.28									
		6-12	--	28.0	146	1.21	167													
<u>Chiang Mai Area</u>																				
3T-1	2	0-6	--	12.0	323+ 0.20	31	2.5	0.49	1.6	0.54										
		6-12	--	13.5	380+ 0.48	63														
3T-2	2	0-6	--	15.8	222	0.40	41	3.0	0.56	1.4	0.51									
		6-12	--	18.2	377+ 0.66	75														
3T-3	2	0-6	--	11.1	150	0.31	33	2.7	0.54	2.0	0.48									
		6-12	--	13.3	154	0.51	36													
3T-6	2	0-6	--	10.3	306+ 0.44	13	3.6	0.52	1.7	0.50	--	--	29	0.44	13	5.0	0.30	2.1	0.47	+4
		6-12	--	14.6	394+ 0.30	—							39	—	—					
3T-7	2	0-6	--	14.3	199	—	—	3.0	0.54	3.0	0.40	--	--	41	—	—	3.7	0.42	2.4	0.27
		6-12	--	14.3	152	—	—						43	—	—					+5
3T-8	2	0-6	--	13.6	173	—	—	2.8	0.60	0.9	0.60									
		6-12	--	14.0	176	—	—													
3T-9	2	0-6	--	15.1	326+ 0.35	45	4.4	0.56	1.7	0.45	--	--	129	0.35	45	4.7	0.42	1.4	0.20	+4
		6-12	--	10.8	464+ 0.38	67							178	0.38	67					
3T-10	2	0-6	--	24.9	224	0.50	39	5.0	0.36	2.0	0.42									
		6-12	--	24.0	230	0.62	60													
3T-11	2	0-6	--	19.1	244	0.64	96	3.6	0.54	1.5	0.56									
		6-12	--	12.2	366	—	—													
3T-12	2	0-6	--	21.7	172	0.83	164	3.6	0.40	1.6	0.42									
		6-12	--	12.2	262	—	—													
3T-13	2	0-6	--	18.9	236	0.63	37	3.0	0.62	1.6	0.42									
		6-12	--	13.5	424+ 0.92	153														
3T-14	2	0-6	--	23.1	130	0.59	30	4.6	0.40	2.4	0.32									
		6-12	--	15.3	188	0.34	33													
3T-16	2	0-6	--	12.3	384+ 0.47	104	5.0	0.52	3.1	0.46										
		6-12	--	11.4	566+ 0.46	182														
3T-17	2	0-6	--	7.1	365+ 0.24	19	4.3	0.52	1.6	0.60										
		6-12	--	8.0	379+ 0.31	64														
3T-18	2	0-6	85.9	31.9	186	1.79	674	3.5	0.49	1.4	0.40	85.9	31.9	106	—	—	—	—	—	12
		6-12	95.8	26.5	269	1.20	516													
3T-19	2	0-6	91.3	28.9	131	0.92	120	2.2	0.35	2.7	0.38									
		6-12	92.9	29.0	150	0.88	127													
3T-20	2	0-6	--	3.5	392+ 0.46	99	2.2	0.70	1.4	0.40										
		6-12	--	4.2	512+ 0.53	146														
3T-21	2	0-6	101.7	22.7	104	0.46	48	5.0	0.30	2.2	0.29									
		6-12	106.4	19.8	130	0.61	80													
3T-22	2	0-6	92.4	29.2	67	—	—	2.5	0.46	2.0	0.46									
		6-12	104.9	20.4	142	—	—													
3T-23	2	0-6	83.8	36.3	113	0.74	86	4.6	0.62	1.3	0.44	83.8	36.3	58	0.69	40	5.6	0.51	2.0	0.47
		6-12	87.7	33.4	182	0.88	161						87.7	33.4	112	0.88	99			0
3T-24	2	0-6	90.3	32.0	66	0.32	40	4.6	0.47	2.0	0.42									
		6-12	97.6	22.6	134	0.91	120													
3T-25	2	0-6	--</td																	

Table A3 (Continued)

Section A. Site Data										Section B. Soil Data												
Location		Grid Coor- di- nates		Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation		Land Use	Depth of Layer in.	Litho			By Wt. %			Atter- berg Limits			USCS	Or- ganic Con- tent %	Spe- cific Grav- ity
Site No.	Map Sheet						Type	Sub-Type	Clay	Type	Fines	LL	PL	PI	Type	CL	CH					
3T-27	48661W	129456	Low	Bottomland flat	2	Low scrub			Undisturbed	0-6	--									--	1.49	--
										6-12	33	44	23	L	76	31	20	11	CL			
3T-28	47661Z	973496	Low	Bottomland flat	3	Short-grass prairie			Cultivated (grazed)	0-6	--									--	1.20	--
										6-12	25	48	27	L	92	36	21	15	CL			
3T-29	47661Z	966472	Low	Bottomland flat	1	Short-grass prairie			Cultivated (grazed)	0-6	--									--	0.95	--
										6-12	60	24	16	SL	52	23	16	7	CL-ML			
3T-30	47661Z	933475	Low	Bottomland flat	0	Short-grass prairie			Cultivated (grazed)	0-6	--									--	2.23	--
										6-12	24	54	22	SL	85	38	25	13	ML			
3T-31	47661Z	959576	Low	Bottomland flat	1	Short-grass prairie			Cultivated (grazed)	0-6	--									--	0.00	--
										6-12	60	24	16	SL	48	23	17	6	SM-SC			
3T-32	47661Z	993544	Low	Bottomland flat	1	Short-grass prairie			Cultivated (idle)	0-6	--									--	1.35	--
										6-12	23	41	36	CL	84	37	25	12	ML			
<u>From River Area</u>																						
4T-2	49471	994501	Low	Bottomland flat	0	Tall-grass prairie			Grased	0-6	17	39	44	C	98	91	36	55	CH	4.34	--	
										6-12	--	--	--		--	--	--	--		--		
4T-4	49471	977463	Low	Bottomland flat	0	Tall-grass prairie			Grased	0-6	13	62	25	SL	93	39	23	36	CH	1.45	--	
										6-12	16	59	25	SL	93	46	18	28	CL	0.62	--	
4T-5	49471	982446	Low	Bottomland flat	0	Short-grass prairie			Grased	0-6	--									--	1.98	--
										6-12	10	56	34	SICL	96	57	20	37	CH			
4T-6	49471	973451	Low	Bottomland flat	0	Tall-grass prairie			Grased	0-6	20	45	35	SICL	99	50	17	33	CH	1.15	--	
										6-12	20	45	35	SICL	99	50	17	33	CH	1.15	--	
4T-7	49471II	970446	Low	Bottomland flat	0	Tall-grass prairie			Grased	0-6	--									--	3.54	--
										6-12	9	49	42	SIC	97	64	25	39	CH			
4T-10	49471II	984425	Low	Bottomland flat	0	Tall-grass prairie			Grased	0-6	7	51	42	SIC	95	76	28	48	CH	0.55	--	
										6-12	7	51	42	SIC	95	76	28	48	CH	0.55	--	
4T-11	49471	012526	Low	Bottomland flat	0	Short-grass prairie			Grased	0-6	17	32	31	C	93	70	36	34	ME	3.24	--	
										6-12	32	35	33	CL	74	60	24	36	CH	3.41	--	
4T-12	49471	018543	Low	Bottomland flat	0	Short-grass prairie			Grased	0-6	30	27	43	C	79	70	32	38	CH	3.24	--	
										6-12	41	31	28	CL	64	47	19	28	CL	3.13	--	
4T-20	49481II	901741	Low	Bottomland flat	0	Short-grass prairie			Cultivated (sugar cane)	0-6	8	69	23	SL	99	34	21	13	CL	1.33	--	
										6-12	--	--	--		--	--	--	--		--		
4T-21	49481II	904778	Low	Bottomland flat	0	Tall scrub savanna			Undisturbed	0-6	60	26	14	SL	48	15	14	1	SM	0.78	--	
										6-12	56	25	19	SL	52	17	12	5	CL-ML	0.70	--	
4T-22	49481II	898791	Low	Bottomland flat	0	Tall scrub forest			Undisturbed	0-6	24	56	20	SL	83	34	23	11	CL	3.13	--	
										6-12	--	--	--		--	--	--	--		--		
4T-23	49481II	879752	Low	Bottomland flat	0	Forest			Undisturbed	0-6	58	29	13	SL	55	14	14	0	ML	0.70	--	
										6-12	--	--	--		--	--	--	--		--		
4T-24	49481II	862776	Low	Bottomland flat	0	Forest			Undisturbed	0-6	58	29	13	SL	50	22	18	4	SM	2.75	--	
										6-12	60	27	13	SL	48	17	14	3	SM	1.33	--	
4T-25	49481II	837739	Low	Natural levee	0	Forest			Undisturbed	0-6	--				--	--	--	--	CL	0.95	--	
										6-12	35	41	24	L	77	24	16	8	CL			
4T-26	49481II	845745	Low	Bottomland flat	0	Forest			Undisturbed	0-6	48	31	21	L	60	26	14	12	CL	1.15	--	
										6-12	44	25	21	OCL	40	30	14	16	SC	0.86	--	
4T-27	49471	036578	Low	Bottomland depression	0	Barren			Undisturbed	0-6	69	16	15	SL	38	17	14	3	SM	0.46	--	
										6-12	39	20	41	C	66	45	15	30	CL	0.55	--	
4T-28	49471	034562	Low	Bottomland flat	0	Short-grass prairie			Cultivated (grazed)	0-6	27	50	23	SL	87	37	20	17	CL	3.62	--	
										6-12	17	51	32	SICL	93	37	20	17	CL	1.98	--	
4T-29	49471	906530	Low	Bottomland flat	0	Short-grass prairie			Grased	0-6	11	66	23	SL	99	34	22	12	CL	1.33	--	
										6-12	24	52	24	SL	86	26	16	10	CL	1.45	--	
4T-31	49481II	929750	Low	Bottomland flat	0	Tall scrub forest			Undisturbed	0-6	63	26	13	SL	50	16	13	3	SM	0.95	--	
										6-12	57	17	26	SCL	50	22	10	12	SC	0.70	--	
4T-32	49481II	918744	Low	Bottomland flat	0	Short-grass prairie			Cultivated (rice)	0-6	20	52	28	SICL	88	31	14	17	CL	1.25	--	
										6-12	21	43	36	CL	87	35	13	22	CL	0.55	--	
4T-33	49481II	906723	Low	Bottomland flat	0	Short-grass prairie			Cultivated (sugar cane)	0-6	22	53	25	SL	87	30	18	12	CL	1.15	--	
										6-12	20	55	25	SL	91	32	19	13	CL	1.15	--	
<u>From River Area</u>																						
3T-1	55601II	733172	Low	Bottomland flat	0	Short-grass prairie			Cultivated (rice)	0-6	30	58	12	SL	81	28	17	11	CL	0.78	2.67	
										6-12	34	56	10	SL	77	28	17	11	CL	0.35	2.69	
3T-2	55601II	766184	Low	Bottomland flat	0	Short-grass prairie			Cultivated (rice)	0-6	16	60	24	SL	88	68	40	28	ME	1.15	2.70	
										6-12	14	52	34	SICL	91	79	46	33	ME	1.05	2.78	

(Continued)

(7 of 16 sheets)

Table A3 (Continued)

Section C. Trafficability Data															
Wet-Season Condition										High-Moisture Condition					
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	Sheargraph				Dry Density lb/cu ft	Sheargraph				Depth to Water Table in.		
				c_u psi	Tan ϕ_u	c_u psi	Tan ϕ_u		c_u psi	Tan ϕ_u	c_u psi	Tan ϕ_u			
3T-27	1	0-6 6-12	-- 14.2	15.2 223	118 0.69	101 126	2.8 0.49	1.0 0.62							
3T-28	2	0-6 6-12	-- --	12.8 11.1	430+ 454+	0.97 0.79	107 124	3.4 0.31	1.8 0.32						
3T-29	2	0-6 6-12	-- --	9.0 13.2	432+ 470+	0.45 0.63	52 120	0.8 0.66	1.5 0.48						
3T-30	2	0-6 6-12	-- --	7.4 8.2	414+ 455+	0.64 0.66	51 106	1.4 0.75	0.8 0.65						
3T-31	2	0-6 6-12	-- --	15.3 17.9	324 294	0.73 0.53	89 83	1.9 0.60	0.6 0.70						
3T-32	2	0-6 6-12	86.7 89.9	32.4 25.2	36 138	0.70 0.52	26 78	2.2 0.46	3.2 0.36						
<u>Pram Buri Area</u>															
4T-2	1	0-6 6-12	-- --	-- 27	15 0.66	12			-- --	-- 27	15 0.66	12			5
4T-4	1	0-6 6-12	-- --	-- 74	53 0.83	39			-- --	-- 74	53 0.83	39			+2
4T-5	1	0-6 6-12	-- --	51.0 43.2	34 53	0.76 0.82	26		-- --	51.0 43.2	34 53	0.76 0.82	26		13
4T-6	1	0-6 6-12	-- --	46.7 38.6	24 58	1.12 0.80	27		-- --	46.7 38.6	24 58	1.12 0.80	27		15
4T-7	1	0-6 6-12	-- --	96.0 58.6	14 45	0.87 0.52	12		-- --	96.0 58.6	14 45	0.87 0.52	12		13
4T-10	1	0-6 6-12	-- --	-- 54	16 0.81	8			-- --	-- 54	16 0.81	8			5
4T-11	1	0-6 6-12	-- --	-- 77	57 0.77	80									
4T-12	1	0-6 6-12	-- --	79.9 49.6	37 48	0.74 0.92	27		-- --	79.9 49.6	37 48	0.74 0.92	27		+1
4T-20	1	0-6 6-12	-- --	8.2 9.4	37/ 670+	--	--	2.5 0.18	0.0 0.47						
4T-21	1	0-6 6-12	-- --	2.8 4.5	393 560	--	--	0.0 0.70	1.8 0.27						
4T-22	1	0-6 6-12	-- --	6.1 5.7	750+ 750+	--	--	0.0 0.62	0.0 0.42						
4T-23	1	0-6 6-12	-- --	3.7 3.6	750+ 750+	--	--	0.4 0.40	0.0 0.38						
4T-24	1	0-6 6-12	-- --	4.4 3.6	600+ 750+	--	--	0.0 0.73	0.0 0.60						
4T-25	1	0-6 6-12	-- --	4.4 3.9	750+ 750+	--	--	1.5 0.45	2.5 0.47						
4T-26	1	0-6 6-12	-- --	6.8 5.6	750+ 750+	--	--	0.0 0.73	0.0 0.73						
4T-27	1	0-6 6-12	-- --	4.2 12.8	750+ 750+	--	--	0.5 0.97	0.0 0.81						
4T-28	1	0-6 6-12	-- --	12.2 15.0	750+ 750+	--	--	0.0 1.11	0.0 0.42						
4T-29	1	0-6 6-12	-- --	29.5 28.7	62 113	0.67 0.69	42 78			-- --	29.5 28.7	62 113	0.67 0.69	42 78	
4T-31	1	0-6 6-12	-- --	1.3 5.4	750+ 750+	--	--	1.5 0.84	1.7 0.34						
4T-32	1	0-6 6-12	-- --	6.5 12.6	750+ 750+	--	--	0.0 0.97	0.0 0.75						
4T-33	1	0-6 6-12	-- --	6.0 10.8	151 328	--	--	0.0 0.58	0.0 0.84						
<u>Khon Kaen Area</u>															
5T-1	2	0-6 6-12	93.1 100.2	19.7 20.8	142 198	0.67 0.80	102 172	3.0 0.54	0.4 0.58	-- --	21.8 23.6	91 104	0.55 0.66	50 69	
5T-2	2	0-6 6-12	-- --	27.0 28.6	252 618	1.37 1.19	292 224	1.0 0.57	1.0 0.32						18

(Continued)

(8 of 16 sheets)

Table A3 (Continued)

Site No.	Map Sheet	Grid Coor- dinate nates	Section A. Site Data						Depth of Layer in.	Section B. Soil Data			Organic Con- tent %	Or- ganic Spe- cific Grav- ity					
			Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation	Land Use	LSDA			Atter- berg Limits	Type	Fines	LL	PL	PI			
								Sand	Silt	Clay									
ST-3	5560II	805180	Low	Bottomland flat	0	Barren	Cultivated (rice)	0-6 6-12	10 77	60 17	30 6	SICL SIL	94 30	60 40	29 30	31 45	CH CL	1.05 0.30	2.71 2.67
ST-4	5560II	806220	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	84 67	11 31	5 4	LS	22 37	-- --	-- --	NP NP	SM SM	0.35 0.25	2.65 2.65
ST-5	5560II	810245	Low	Bottomland flat	0	Short-grass prairie	Cultivated (jute)	0-6 6-12	69 65	25 31	6 4	SL	37 42	-- --	-- --	NP NP	SM SM	0.95 0.30	2.63 2.65
ST-6	5560I	827257	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	76 83	22 17	2 0	LS	30 23	-- --	-- --	NP NP	SM SM	1.90 0.32	2.63 2.63
ST-7	5560I	850277	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	72 67	27 31	1 2	LS	35 30	17 26	13 13	4 SC	SM-SC SC	0.70 0.55	2.64 2.77
ST-8	5560II	735148	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	31 27	60 60	9 13	SIL	77 81	22 25	-- 18	7	ML CL-ML	0.62 0.46	2.61 2.71
ST-9	5560III	907186	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	77 75	20 21	3 4	LS	33 35	-- --	-- --	NP NP	SM SM	0.78 0.25	2.65 2.66
ST-10	5560III	933176	High	Upland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	82 79	16 18	2 3	LS	27 31	-- --	-- --	NP NP	SM SM	0.70 0.38	2.65 2.67
ST-11	5560II	718218	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	63 68	30 27	7 5	SL	46 39	-- --	-- --	NP NP	SM SM	0.55 0.25	2.67 2.69
ST-12	5560II	730246	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	40 39	54 53	6 8	SIL	69 70	28 33	18 22	10 11	CL CL	1.05 0.38	2.60 2.60
ST-13	5560II	610155	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	44 40	46 46	10 14	L	65 67	35 38	22 21	13 17	CL CL	0.78 0.95	2.71 2.76
ST-14	5560II	660152	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	48 42	42 46	10 12	L	63 68	24 31	-- 17	14	ML CL	0.62 0.46	2.62 2.64
ST-15	5461III	160453	Low	Upland depression	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	72 76	24 24	4 0	SL	39 33	-- --	-- --	NP NP	SM SM	0.62 0.38	2.65 2.64
ST-16	5461III	125460	Low	Upland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	59 54	46 39	5 7	SL	54 58	-- --	-- --	NP NP	ML ML	0.32 0.46	2.62 2.65
ST-17	5560II	665092	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	74 67	19 23	7 10	SL	33 41	-- 25	-- 17	8	SC	0.38 0.38	2.64 2.65
ST-18	5560II	667244	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	76 72	21 24	3 4	LS	40 46	-- --	-- --	NP NP	SM SM	1.25 0.55	2.65 2.67
ST-19	5460I	237277	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	9 10	61 65	30 25	SICL SIL	94 93	72 73	36 28	36 45	MH CH	0.70 0.46	2.68 2.78
ST-20	5460I	236287	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	59 59	37 34	4 7	SL	48 48	22 30	18 14	4 16	SM-SC SC	0.70 0.55	2.67 2.69
ST-21	5460I	234344	High	Upland depression	0	Short-grass prairie	Logged	0-6 6-12	73 65	23 28	4 7	SL	38 44	-- 24	-- 18	6	SM-SC	0.86 0.46	2.68 2.63
ST-22	5460I	283324	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	41 44	52 47	7 9	SL	69 65	23 29	-- 14	15	ML CL	0.95 0.78	2.61 2.60
ST-23	5460I	163395	High	Upland flat	0	Woodland	Logged	0-6 6-12	82 82	15 16	3 2	LS	26 26	-- --	-- --	NP NP	SM SM	0.62 0.25	2.61 2.63
ST-24	5460I	143363	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	62 74	34 26	4 0	SL	49 34	-- --	-- --	NP NP	SM SM	0.62 0.38	2.59 2.64
ST-25	5460II	188253	Low	Bottomland flat	0	Barren	Cultivated (rice)	0-6 6-12	30 24	59 65	11 11	SIL	81 87	50 41	20 29	30 12	CL ML	0.86 0.70	2.67 2.66
ST-26	5460II	293240	Low	Upland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	65 59	34 40	1 1	SL	47 52	-- 20	-- 16	4	CL-ML	0.32 0.32	2.62 2.66
ST-27	5461III	990485	Low	Upland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	51 63	43 33	6 4	SL	58 48	22 19	-- --	NP NP	ML SM	0.55 0.38	2.72 2.72
ST-28	5460II	266190	Low	Bottomland depression	0	Low scrub	Cultivated (rice)	0-6 6-12	52 45	42 47	6 8	SL	60 67	24 26	17 15	7	CL-ML CL	0.38 0.32	2.65 2.65
ST-29	5560III	455215	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	67 57	30 39	3 4	SL	48 60	-- --	-- --	NP NP	SM ML	0.38 0.18	2.67 2.67
ST-30	5560III	375225	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	54 54	44 41	2 5	SL	60 58	-- 18	-- --	NP NP	ML ML	0.70 0.38	2.64 2.65
ST-31	5560III	377173	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	20 14	67 62	13 24	SIL	89 91	22 27	19 18	3	ML CL	0.55 0.38	2.64 2.64
ST-32	5560III	504145	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	72 74	25 21	3 5	SL	37 38	-- --	-- --	NP NP	SM SM	0.70 0.38	2.63 2.66
ST-33	5560III	563137	High	Upland flat	0	Low scrub	Cultivated (jute)	0-6 6-12	77 79	19 18	4 3	LS	32 30	-- --	-- --	NP NP	SM SM	0.55 0.38	2.65 2.61

(Continued)

(9 of 16 sheets)

Table A3 (Continued)

Site No.	No. of Visits	Depth in.	Section C. Trafficality Data										Depth to Water Table in.				
			Wet-Season Condition					High-Moisture Condition									
			Layer No.	Density lb/cu ft	MC, % CI	RI	RCI	Sheargraph c_u	Tan δ_u	Sheargraph c_u	Tan δ_u	Dry Density lb/cu ft	MC, % CI	RI	RCI	Sheargraph c_u	Tan δ_u
ST-3	2	0-6	84.5	27.8	138	1.03	137	2.4	0.44	2.0	0.22						
		6-12	86.0	29.5	235	1.10	298										
ST-4	2	0-6	--	10.0	309+	0.97	139	2.2	0.41	0.8	0.42						
		6-12	--	8.6	518+	0.88	251										
ST-5	2	0-6	114.2	10.6	338+	--	--	2.8	0.24	1.0	0.30						
		6-12	115.4	10.8	338+	0.62	233										
ST-6	2	0-6	91.4	16.6	223	--	--	1.2	0.58	0.1	0.44						
		6-12	104.0	11.4	384	--	--										
ST-7	2	0-6	103.8	15.3	122	--	--	1.7	0.44	0.5	0.47						
		6-12	93.8	11.2	187	--	--										
ST-8	2	0-6	87.4	15.3	376+	0.40	58	0.7	0.62	0.2	0.52						
		6-12	77.5	15.2	429+	0.75	81										
ST-9	2	0-6	--	11.7	434+	--	--	0.2	0.72	0.2	0.50						
		6-12	--	10.4	550+	1.50	660										
ST-10	2	0-6	90.2	5.3	196	2.48	460	1.0	0.58	1.2	0.37						
		6-12	93.7	4.4	220	1.94	347										
ST-11	2	0-6	--	12.1	302+	0.32	55	3.0	0.44	1.7	0.46						
		6-12	--	16.2	442+	--	--										
ST-12	2	0-6	--	15.0	336+	0.97	201	3.6	0.36	1.0	0.24						
		6-12	--	15.2	460+	0.64	106										
ST-13	2	0-6	93.5	26.7	86	1.58	152	1.8	0.56	1.4	0.34	--	28.2	67	1.06	71	--
		6-12	90.4	28.0	256	1.22	314					--	31.6	198	1.20	238	19
ST-14	2	0-6	--	14.6	385+	0.78	126	0.8	0.63	0.7	0.46						
		6-12	--	15.4	456+	0.88	142										
ST-15	2	0-6	96.5	13.0	197	1.24	246	2.3	0.42	0.1	0.51						
		6-12	96.3	11.4	250	1.69	485										
ST-16	2	0-6	97.0	18.6	207	0.58	85	3.3	0.50	1.8	0.37						
		6-12	107.2	17.0	247	0.82	142										
ST-17	2	0-6	99.8	17.8	168	0.49	53	0.8	0.60	0.4	0.44						
		6-12	101.5	18.0	159	0.74	117										
ST-18	2	0-6	--	11.6	381+	0.76	271	0.4	0.56	0.6	0.41	--	6.3	357	0.76	271	0.7
		6-12	--	17.0	556+	0.62	225					--	12.6	363	0.62	225	0.60
ST-19	2	0-6	93.0	34.6	93	0.61	60	3.8	0.41	1.9	0.32						
		6-12	95.0	33.0	160	1.08	146										
ST-20	2	0-6	--	15.0	415+	0.52	42	3.7	0.53	2.2	0.32						
		6-12	--	17.6	428+	1.42	152										
ST-21	2	0-6	--	10.2	374+	1.32	259	4.4	0.42	1.0	0.47						
		6-12	--	10.4	461+	1.12	193										
ST-22	2	0-6	96.5	16.3	220	1.03	242	1.2	0.82	1.2	0.57						
		6-12	98.4	19.5	180	0.82	148										
ST-23	2	0-6	93.1	9.2	328	1.37	446	2.9	0.52	2.0	0.31						
		6-12	95.4	8.8	416	2.36	1020										
ST-24	2	0-6	--	18.2	265	0.40	53	3.0	0.66	0.8	0.49						
		6-12	--	15.8	453+	1.22	231										
ST-25	2	0-6	--	29.0	254	0.84	48	1.5	0.57	1.4	0.42						
		6-12	--	27.2	218	0.81	40										
ST-26	2	0-6	--	12.4	284+	0.68	84	1.8	0.68	1.0	0.29						
		6-12	--	13.4	452+	0.55	84										
ST-27	2	0-6	--	13.0	432+	0.79	100	3.0	0.60	0.6	0.63						
		6-12	--	12.1	462+	0.94	165										
ST-28	2	0-6	107.5	19.0	168	0.96	180	2.0	0.56	0.6	0.48	--	24.1	52	0.79	40	--
		6-12	105.5	20.6	174	1.36	270					--	26.3	100	0.94	94	19
ST-29	2	0-6	97.7	14.7	248	1.24	344	0.4	0.79	0.6	0.48						
		6-12	96.0	13.8	224	1.24	300										
ST-30	2	0-6	--	11.8	286+	0.86	252	2.6	0.59	1.0	0.35						
		6-12	--	14.6	472+	0.71	137										
ST-31	2	0-6	96.8	15.9	138	1.19	206	1.5	0.54	0.5	0.50						
		6-12	100.5	17.9	237	1.22	333										
ST-32	2	0-6	--	12.6	374+	0.93	132	1.5	0.62	0.2	0.39						
		6-12	--	10.6	495+	1.14	274										
ST-33	2	0-6	--	3.9	540+	--	--	0.2	0.62	0.2	0.39	</					

Table A3 (Continued)

Site No.	Map Sheet	Grid Coor- di- nates	Topog- raphy Class	Section A. SITE DATA						Section B. SOIL DATA											
				Topo- graphic Position	Slope %	Vegetation			Land Use	Depth of Layer in.	USDA Texture by Wt, %			Type	USCS By Wt %			Type	Organic Content %	Specific Gravity	
						Sand	Silt	Clay			LL	PL	PI		ML	FL	WL				
ST-34	5560III	515237	Low	Bottomland flat	0	Bare			Cultivated (idle)	0-6 6-12	56 58	41 44	3 5	SL	52 52	-- LL	-- 11	NP 52	ML 13	0.32 0.32	2.60 2.61
ST-35	5560III	560207	High	Oupland flat	0	Short-grass prairie			Cultivated (jute)	0-6 6-12	76 75	21 22	3 3	LS	33 34	-- --	-- NP	SM SM	1.05 0.86	2.62 2.65	
ST-40	5560II	797160	Low	Bottomland flat	0	Low scrub			Logged	0-6 6-12	7 5	28 35	65 60	C	96 97	86 80	30 28	56 52	CH	4.70 1.98	-- --
ST-41	5560II	792158	Low	Bottomland depression	0	Low scrub			Logged	0-6 6-12	-- 6	-- 23	-- 71	C	-- 97	-- 100	-- 31	-- 69	CH	3.96 1.98	-- --
ST-42	5560II	794157	Low	Bottomland flat	0	Tall-grass prairie			Undisturbed	0-6 6-12	-- 6	-- 23	-- 71	C	-- 97	-- 100	-- 31	-- 69	CH	2.23 1.98	-- --
ST-43	5560II	794153	Low	Bottomland flat	0	Low scrub			Undisturbed	0-6 6-12	-- 6	-- 28	-- 66	C	-- 98	-- 79	-- 27	-- 52	CH	3.74 3.96	-- --
ST-44	5560II	794153	Low	Bottomland depression	0	Low scrub			Logged	0-6 6-12	-- 7	-- 29	-- 64	C	-- 97	-- 93	-- 38	-- 55	CH	5.50 2.75	-- --
ST-45	5560II	794153	Low	Bottomland depression	0	Low scrub			Logged	0-6 6-12	-- 5	-- 27	-- 68	C	-- 99	-- 93	-- 35	-- 58	CH	7.24 3.41	-- --
ST-46	5560II	727240	Low	Bottomland flat	0	Short grass prairie			Cultivated (rice)	0-6 6-12	-- 58	-- 26	-- 16	SL	-- 53	-- 21	-- 12	-- 9	CL	1.25 0.70	-- --
ST-47	5560II	727237	Low	Bottomland flat	0	Short-grass prairie			Cultivated (rice)	0-6 6-12	-- 33	-- 38	-- 29	CL	-- 76	-- 32	-- 13	-- 19	CL	1.45 0.95	-- --
ST-48	5560II	727240	Low	Bottomland flat	0	Short-grass prairie			Cultivated (rice)	0-6 6-12	-- 35	-- 41	-- 24	L	-- 76	-- 29	-- 13	-- 16	CL	0.78 0.70	-- --
ST-49	5560II	732237	Low	Bottomland flat	0	Short-grass prairie			Cultivated (rice)	0-6 6-12	-- 35	-- 27	-- 38	CL	-- 74	-- 40	-- 14	-- 26	CL	1.25 0.86	-- --
ST-50	5560II	760201	Low	Bottomland flat	0	Short-grass prairie			Cultivated (rice)	0-6 6-12	-- 27	-- 33	-- 20	SIL	-- 89	-- 28	-- 18	-- 10	CL	1.15 0.78	-- --
<u>Chanthaburi Area</u>																					
6T-1	5349III	486103	Low	Bottomland flat	0	Woodland			Rubber plantation	0-6 6-12	-- 52	-- 30	-- 18	GL	-- 29	-- 48	-- 30	-- 18	SM	-- --	3.14
6T-2	5349II	120070	High	Terrace slope	2	Tall-grass prairie			Undisturbed	0-6 6-12	-- 52	-- 30	-- 18	VCL	-- 23	-- 43	-- 21	-- 22	SC	-- --	3.19
6T-3	5448IV	849000	High	Upper flat	2	Short-grass prairie			Rambutan orchard	0-6 6-12	-- 33	-- 48	-- 19	L	-- 75	-- 31	-- 19	-- 12	CL	0.78 2.69	-- --
6T-4	5349II	120093	Low	Bottomland depression	0	Tall-grass prairie			Undisturbed	0-6 6-12	-- 16	-- 34	-- 30	SICL	-- 87	-- 30	-- 18	-- 12	CL	0.70 2.61	-- --
6T-5	5349II	133032	High	Terrace slope	2	Tall scrub woodland			Logged	0-6 6-12	-- 64	-- 33	-- 3	SL	-- 49	-- --	-- NP	-- SM	0.46 2.64	-- --	
6T-6	5448IV	969083	Low	Bottomland flat	0	Short-grass prairie			Cultivated (idle)	0-6 6-12	-- 58	-- 26	-- 16	SL	-- 45	-- 25	-- 15	-- 10	SC	0.55 2.65	-- --
6T-7	5349II	073103	Low	Bottomland depression	0	Short-grass prairie			Grazed	0-6 6-12	-- 10	-- 64	-- 26	SIL	-- 88	-- 30	-- 20	-- 10	CL	0.62 2.66	-- --
6T-8	5448IV	862788	Low	Bottomland flat	0	Short-grass prairie			Cultivated (idle)	0-6 6-12	-- 69	-- 21	-- 10	SL	-- 40	-- 28	-- --	-- NP	SM	0.38 2.68	-- --
6T-9	5349II	207077	Low	Bottomland flat	0	Short-grass prairie			Cultivated (rice)	0-6 6-12	-- 6	-- 52	-- 42	SIC	-- 95	-- 47	-- 30	-- 17	NL	1.05 2.71	-- --
6T-10	5448IV	883910	Low	Bottomland flat	0	Short-grass prairie			Cultivated (idle)	0-6 6-12	-- 84	-- 8	-- 8	L	-- 18	-- 21	-- 14	-- 7	SM-SC	-- --	2.65
6T-11	5348I	145970	Low	Bottomland flat	0	Woodland			Coconut orchard	0-6 6-12	-- 80	-- 14	-- 6	L	-- 26	-- --	-- NP	-- SM	0.70 2.65	-- --	
6T-12	5448IV	915836	Low	Bottomland flat	0	Savanna			Rambutan orchard	0-6 6-12	-- 86	-- 8	-- 6	L	-- 17	-- 17	-- --	-- NP	SM	-- 2.62	-- --
6T-13	5448IV	873881	Low	Bottomland flat	0	Savanna			Cultivated (sugar cane)	0-6 6-12	-- 79	-- 17	-- 4	L	-- 27	-- --	-- NP	-- SM	-- 2.67	-- --	
6T-14	5448III	893811	Low	Bottomland flat	0	Low scrub			Pipa palm orchard	0-6 6-12	-- 14	-- 52	-- 34	SICL	-- 91	-- 77	-- 33	-- 44	CH	4.15 2.60	-- --
6T-15	5448III	889791	Low	Bottomland flat	0	Savanna			Cultivated (idle)	0-6 6-12	-- 18	-- 44	-- 38	SICL	-- 85	-- 60	-- 36	-- 24	MH	5.02 2.61	-- --
6T-16	5448IV	846936	Low	Bottomland flat	0	Savanna			Cultivated (idle)	0-6 6-12	-- 13	-- 55	-- 32	SICL	-- 93	-- 32	-- 21	-- 11	CL	1.65 2.67	-- --
6T-17	5348I	225970	Low	Bottomland flat	0	Low scrub			Logged	0-6 6-12	-- 19	-- 58	-- 23	SIL	-- 88	-- 37	-- 20	-- 17	CL	2.47 2.61	-- --

(Continued)

(11 of 16 sheets)

Table A3 (Continued)

Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	Section C. Trimmability Data								Depth to Water Table in.							
				Wet-Season Condition				Sheargraph											
				MC, %	CI	RI	RCI	c _u psi	Tan θ _u	a _{ur} psi	Tan θ _{ur}	MC, %	CI	RI	RCI	c _u psi	Tan θ _u	a _{ur} psi	Tan θ _{ur}
ST-34	2	0-6	--	11.6	310	0.62	87	2.2	0.99	1.2	0.40								
		6-12	--	13.0	454+	--	--												
ST-35	2	0-6	--	3.1	604+	--	--	1.6	0.98	0.3	0.40								
		6-12	--	7.0	750+	--	--												
ST-40	2	0-6	72.8	19.8	329	1.67	449	0.6	0.91	0.0	0.61								
		6-12	72.8	22.3	492+	1.08	420												
ST-41	2	0-6	--	21.8	268	--	--	0.6	1.04	0.7	0.51								
		6-12	--	25.3	521+	--	--												
ST-42	2	0-6	68.3	62.0	106	1.78	175	0.8	0.72	0.0	0.48								
		6-12	74.9	42.2	173	1.45	149												
ST-43	2	0-6	62.8	56.4	158	0.80	23	1.4	0.69	1.0	0.34								
		6-12	80.2	40.4	242	0.90	93												
ST-44	2	0-6	59.9	30.9	260	2.80	672	0.6	0.85	0.0	0.56								
		6-12	64.4	31.2	392+	1.24	487												
ST-45	1	0-6	65.2	29.6	269	1.25	336	0.9	0.87	0.2	0.60								
		6-12	70.5	35.0	365	1.59	500												
ST-46	2	0-6	--	11.4	366	1.05	359	0.9	0.86	0.6	0.49								
		6-12	--	11.4	400+	--	--												
ST-47	2	0-6	--	14.8	344+	--	--	1.2	0.70	0.1	0.58								
		6-12	--	14.0	400+	--	--												
ST-48	2	0-6	--	9.8	616+	--	--	1.3	0.76	0.7	0.64								
		6-12	--	14.3	750+	--	--												
ST-49	2	0-6	--	11.0	588+	--	--	2.2	0.69	0.8	0.60								
		6-12	--	12.5	750+	--	--												
ST-50	2	0-6	--	11.4	547+	--	--	1.4	0.97	0.4	0.52								
		6-12	--	12.3	750+	--	--												
Chanthaburi Area																			
ST-1	1	0-6	--	--	205	--	--	2.3	0.73	1.6	0.47								
		6-12	--	--	523+	--	--												
ST-2	1	0-6	--	--	241	--	--	0.0	0.93	0.6	0.53								
		6-12	--	--	351+	--	--												
ST-3	1	0-6	--	23.0	70	0.44	31	--	--	--	--								
		6-12	--	22.0	103	1.10	113												
ST-4	1	0-6	--	22.2	54	0.25	13	0.8	0.67	1.4	0.27	--	22.2	54	0.25	13	--	--	--
		6-12	--	21.5	76	0.53	41					--	21.5	76	0.53	41			6
ST-5	1	0-6	--	17.4	212	0.64	136	1.0	0.49	0.6	0.47								
		6-12	--	14.5	269	0.55	148												
ST-6	1	0-6	--	28.5	140	0.80	112	--	--	--	--	--	28.5	140	0.80	112	--	--	--
		6-12	--	16.2	192	0.80	155					--	16.2	192	0.80	155			+1
ST-7	1	0-6	--	23.1	111	0.62	69	2.1	0.70	0.0	0.53								
		6-12	--	28.6	109	0.67	73												
ST-8	1	0-6	--	21.3	117	1.26	147	0.8	0.47	0.7	0.42	--	21.3	117	1.26	147	--	--	--
		6-12	--	24.4	307	1.16	357					--	24.4	307	1.16	357			12
ST-9	1	0-6	--	--	40	0.55	22	2.6	0.42	0.4	0.45	--	--	40	0.55	22	2.6	0.42	0.4
		6-12	--	--	128	0.60	77					--	--	128	0.60	77	2.6	0.42	0.4
ST-10	1	0-6	--	20.5	240	--	--	--	--	--	--	--	20.5	240	--	--	--	--	+3
		6-12	--	12.6	633+	--	--					--	12.6	633+	--				
ST-11	1	0-6	--	14.2	159	--	--	1.4	0.60	0.4	0.34								
		6-12	--	13.6	168	--	--												
ST-12	1	0-6	--	12.3	65	2.25	143	1.2	0.45	0.0	0.47								
		6-12	--	12.1	105	2.02	212												
ST-13	1	0-6	--	19.2	80	--	--	1.0	0.45	0.0	0.55								
		6-12	--	15.5	215	--	--												
ST-14	1	0-6	--	70.9	14	1.58	22	--	--	--	--	--	70.9	14	1.58	22	--	--	--
		6-12	--	77.4	30	1.44	43					--	77.4	30	1.44	43			3
ST-15	1	0-6	--	45.6	29	0.78	23	--	--	--	--	--	45.6	29	0.78	23	--	--	--
		6-12	--	48.1	55	0.77	42					--	48.1	5					

Table A3 (Continued)

Site No.	Map Sheet	Section A. Site Data						Section B. Soil Data												
		Grid Coor- dinate	Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA			Type	USCS			Atter- berg Limits	Type	Organic Content %	Spec- ific Gravity	
									Sand	Silt	Clay		%	LL	PL	PI				
6T-18	5448IV	800647	Low	Bottomland flat	0	Barren	Undisturbed	0-6	--	--	--	--	--	--	--	--	CL	2.87	2.65	
								6-12	56	31	13	SL	53	43	24	19				
6T-19	5348I	210950	Low	Tidal flat	0	Low scrub	Logged	0-6	--	--	--	--	--	--	--	--	MH	--	2.64	
								6-12	40	53	7	SIL	73	71	49	22				
6T-20	5348I	171936	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	CL	0.86	2.63	
								6-12	50	24	26	SCL	56	27	15	12				
6T-21	5348I	277879	Low	Beach	1	Woodland	Coconut orchard	0-6	--	--	--	--	--	--	--	--	NP	SP-SM	--	
								6-12	99	1	0	S	6	--	--	--				
6T-22	5448III	901826	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	CL	--	--	
								6-12	30	47	23	L	74	39	18	21				
6T-23	5448III	820809	Low	Bottomland flat	0	Savanna	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	CH	4.05	2.65	
								6-12	21	45	34	CL	84	75	38	37				
6T-24	5348I	195976	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	CL	0.78	2.66	
								6-12	45	27	28	CL	60	34	19	15				
6T-25	5448IV	810923	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-	--	--	--	--	--	--	--	--	CH	0.70	2.66	
								6-12	15	52	33	SICL	90	50	26	24				
6T-26	5448IV	976006	High	Upper slope	4	Savanna	Rubber plantation	0-6	--	--	--	--	--	--	--	--	SC	--	2.77	
								6-12	76	15	9	GSL	15	27	19	8				
6T-27	5349II	220081	Low	Bottomland flat	0	Short-grass prairie	Orange orchard	0-6	--	--	--	--	--	--	--	--	SC	0.62	2.63	
								6-12	65	22	13	SL	40	22	14	8				
6T-28	5448IV	896980	Low	Bottomland flat	1	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	ML	1.33	2.61	
								6-12	14	59	27	SIL	90	49	34	15				
6T-29	5448IV	960017	Low	Bottomland flat	0	Low scrub; short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	MH	0.78	2.67	
								6-12	34	34	32	CL	71	58	32	26				
6T-30	5449III	978060	Low	Bottomland flat	0	Low scrub; short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	MH	0.78	2.70	
								6-12	22	40	38	CL	75	53	33	20				
6T-31	5449III	993072	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	CL	0.38	2.61	
								6-12	57	29	14	SL	52	27	15	12				
6T-32	5449III	924035	Low	Bottomland flat	0	Savanna	Rambutan orchard	0-6	--	--	--	--	--	--	--	--	MH	1.33	2.65	
								6-12	22	47	31	CL	83	54	34	20				
6T-33	5449III	932074	Low	Bottomland depression	0	Woodland	Rubber plantation	0-6	--	--	--	--	--	--	--	--	CL	0.86	2.62	
								6-12	50	30	20	L	55	32	20	12				
6T-34	5348I	217015	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6	--	--	--	--	--	--	--	--	MH	2.35	2.63	
								6-12	15	56	29	SICL	89	55	36	19				
6T-35	5448IV	775959	Low	Bottomland flat	0	Savanna	Rambutan orchard	0-6	--	--	--	--	--	--	--	--	SM	2.87	2.81	
								6-12	59	29	12	SL	48	58	45	13				
6T-36	5349II	103019	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	NP	SM	0.38	2.63
								6-12	87	11	2	S	22	--	--	--				
6T-37	5449III	784024	Low	Terrace flat	0	Low scrub	Rubber plantation	0-6	--	--	--	--	--	--	--	--	SC	--	2.61	
								6-12	65	20	15	GSL	32	39	23	16				
6T-38	5448IV	825014	Low	Upland flat	0	Short-grass prairie	Rubber plantation	0-6	--	--	--	--	--	--	--	--	SM	1.65	2.58	
								6-12	59	21	20	SL	40	42	26	16				
6T-39	5448IV	914864	Low	Terrace flat	0	Savanna	Durian orchard	0-6	--	--	--	--	--	--	--	--	MH	1.55	2.62	
								6-12	43	36	21	L	60	54	34	20				
6T-40	5449III	821079	High	Upland flat	0	Low scrub	Cultivated (idle)	0-6	--	--	--	--	--	--	--	--	SM	--	--	
								6-12	59	28	13	SL	50	41	29	12				
6T-41	5449III	806024	High	Upland flat	0	Savanna	Orange orchard	0-6	--	--	--	--	--	--	--	--	SC	0.70	2.62	
								6-12	60	22	18	SL	44	38	19	19				
6T-42	5448III	009814	Low	Terrace flat	0	Savanna	Rubber plantation	0-6	--	--	--	--	--	--	--	--	SM	1.33	2.61	
								6-12	63	24	13	SL	36	45	30	15				
6T-43	5448III	960793	Low	Bottomland flat	0	Savanna	Rubber plantation	0-6	--	--	--	--	--	--	--	--	NP	SM	1.45	2.60
								6-12	77	14	9	SL	26	--	--	--				
6T-44	5449III	890050	High	Upland flat	0	Tall scrub woodland	Logged	0-6	--	--	--	--	--	--	--	--	ML	1.65	2.60	
								6-12	45	37	18	L	61	44	31	13				
6T-45	5448IV	804004	High	Upper slope	15	Savanna	Rubber plantation	0-6	--	--	--	--	--	--	--	--	SM	--	2.64	
								6-12	59	17	24	GSCL	28	53						

Table A3 (Continued)

Section C. Traffability Data																			
Wet-Season Condition										High-Moisture Condition									Depth to Water Table in.
Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	Sheargraph					Dry Density lb/cu ft	Sheargraph					c _u psi	Tan ϕ_u	Tan α_{ur}	Tan α_{ur}	in.
				c _u	Tan ϕ_u	Tan α_{ur}	Tan α_{ur}			c _u	Tan ϕ_u	Tan α_{ur}	Tan α_{ur}						
6T-18	1	0-6	--	45.5	13	0.97	13	--	--	--	--	--	--	--	45.5	13	0.97	13	6
		6-12	--	54.6	22	0.98	21	--	--	--	--	--	--	--	54.6	22	0.98	21	
6T-19	1	0-6	--	--	36	0.69	25	--	--	--	--	--	--	--	36	0.69	25	--	3
		6-12	--	--	54	0.97	52	--	--	--	--	--	--	--	54	0.97	52	--	
6T-20	1	0-6	--	18.9	187	0.65	122	1.0	0.62	0.2	0.36	--	--	18.9	187	0.65	122		
		6-12	--	20.6	131	0.70	92	--	--	--	--	--	--	--	20.6	131	0.70	92	12
6T-21	1	0-6	--	23.0	132	--	--	--	--	--	--	--	--	--	23.0	132	--	--	
		6-12	--	21.6	212	--	--	--	--	--	--	--	--	--	21.6	212	--	--	
6T-22	1	0-6	--	18.3	55	0.80	44	--	--	--	--	--	--	--	18.3	55	0.80	44	+3
		6-12	--	33.3	87	0.58	50	--	--	--	--	--	--	--	33.3	87	0.58	50	
6T-23	1	0-6	--	59.0	30	0.85	25	--	--	--	--	--	--	--	59.0	30	0.85	25	+13
		6-12	--	75.3	46	0.81	37	--	--	--	--	--	--	--	75.3	46	0.81	37	
6T-24	1	0-6	--	31.6	94	0.65	61	2.0	0.36	1.3	0.34	--	--	31.6	94	0.65	61	6	
		6-12	--	23.7	130	0.80	104	--	--	--	--	--	--	--	23.7	130	0.80	104	
6T-25	1	0-6	--	30.5	78	1.29	101	--	--	--	--	--	--	--	30.5	78	1.29	101	+7
		6-12	--	30.8	128	0.59	75	--	--	--	--	--	--	--	30.8	128	0.59	75	
6T-26	1	0-6	--	15.2	205	--	--	1.0	0.58	0.8	0.42	--	--	--	15.2	205	--	--	
		6-12	--	12.3	633+	--	--	--	--	--	--	--	--	--	12.3	633+	--	--	
6T-27	1	0-6	--	14.3	154	1.29	199	1.2	0.62	0.9	0.51	--	--	--	14.3	154	1.29	199	
		6-12	--	14.0	192	0.78	150	--	--	--	--	--	--	--	14.0	192	0.78	150	
6T-28	1	0-6	--	39.2	144	0.77	111	0.8	0.60	1.1	0.51	--	--	39.2	144	0.77	111		
		6-12	--	37.7	281	0.52	146	--	--	--	--	--	--	--	37.7	281	0.52	146	12
6T-29	1	0-6	--	21.9	135	0.64	86	--	--	--	--	--	--	--	21.9	135	0.64	86	+3
		6-12	--	33.4	183	0.43	79	--	--	--	--	--	--	--	33.4	183	0.43	79	
6T-30	1	0-6	--	33.3	102	0.66	67	--	--	--	--	--	--	--	33.3	102	0.66	67	+5
		6-12	--	30.2	172	0.73	125	--	--	--	--	--	--	--	30.2	172	0.73	125	
6T-31	1	0-6	--	17.5	155	--	--	--	--	--	--	--	--	--	17.5	155	--	--	+11
		6-12	--	15.2	185	--	--	--	--	--	--	--	--	--	15.2	185	--	--	
6T-32	1	0-6	--	36.7	87	0.60	52	--	--	--	--	--	--	--	36.7	87	--	--	
		6-12	--	30.6	132	0.70	92	--	--	--	--	--	--	--	30.6	132	0.70	92	
6T-33	1	0-6	--	24.7	112	0.82	92	2.8	0.60	1.9	0.45	--	--	--	24.7	112	0.82	92	
		6-12	--	21.5	127	0.71	90	--	--	--	--	--	--	--	21.5	127	0.71	90	
6T-34	1	0-6	--	34.7	132	0.60	79	2.4	0.49	1.2	0.47	--	--	--	34.7	132	0.60	79	
		6-12	--	45.5	90	0.40	36	--	--	--	--	--	--	--	45.5	90	0.40	36	
6T-35	1	0-6	--	48.2	41	0.33	13	1.2	0.73	1.7	0.42	--	--	--	48.2	41	0.33	13	
		6-12	--	44.8	60	0.49	29	--	--	--	--	--	--	--	44.8	60	0.49	29	
6T-36	1	0-6	--	20.2	252	1.70	428	--	--	--	--	--	--	--	20.2	252	1.70	428	9
		6-12	--	19.4	442	1.91	844	--	--	--	--	--	--	--	19.4	442	1.91	844	
6T-37	1	0-6	--	13.1	275	1.10	248	2.2	0.51	0.5	0.49	--	--	--	13.1	275	1.10	248	
		6-12	--	14.1	325	1.15	359	--	--	--	--	--	--	--	14.1	325	1.15	359	
6T-38	1	0-6	--	17.5	99	1.25	124	1.7	0.40	0.5	0.51	--	--	--	17.5	99	1.25	124	
		6-12	--	20.7	237	1.45	344	--	--	--	--	--	--	--	20.7	237	1.45	344	
6T-39	1	0-6	--	30.0	175	0.77	135	0.5	0.49	0.3	0.45	--	--	--	30.0	175	0.77	135	
		6-12	--	29.0	187	0.97	182	--	--	--	--	--	--	--	29.0	187	0.97	182	
6T-40	1	0-6	--	29.3	109	0.37	40	2.2	0.62	1.2	0.58	--	--	--	29.3	109	0.37	40	
		6-12	--	28.6	146	0.48	70	--	--	--	--	--	--	--	28.6	146	0.48	70	
6T-41	1	0-6	--	17.2	107	1.35	144	2.0	0.60	1.0	0.55	--	--	--	17.2	107	1.35	144	
		6-12	--	16.9	180	0.83	149	--	--	--	--	--	--	--	16.9	180	0.83	149	
6T-42	1	0-6	--	23.3	170	--	--	0.8	0.42	0.2	0.36	--	--	--	23.3	170	--	--	
		6-12	--	22.4	267	--	--	--	--	--	--	--	--	--	22.4	267	--	--	
6T-43	1	0-6	--	11.0	175	--	--	0.5	0.51	0.2	0.55	--	--	--	11.0	175	--	--	
		6-12	--	11.1	212	--	--	--	--	--	--	--	--	--	11.1	212	--	--	
6T-44	1	0-6	--	30.0	144	0.72	104	2.0	0.42	1.0	0.49	--	--	--	30.0	144	0.72	104	
		6-12	--	32.6	128	0.66	84	--	--	--	--	--	--	--	32.6	128	0.66	84	
6T-45	1	0-6	--	--	458	--	--	1.0	0.40	1.0	0.36	--	--	--	--	--	--		
		6-12	--	--	750+	--	--	--	--	--	--	--	--	--	750+	--	--	--	
6T-46	1	0-6	--	40.9	53	1.53	81	1.2	0.55	1.5	0.49	--	--	--	40.9	53	1.53	81	
		6-12	--	40.0	78	1.66	130	--	--	--	--	--	--	--	40.0	78	1.66	130	
6T-47	1	0-6	--	47.3	69	0.38	26	0.6	0.60	0.8	0.58	--	--	--	47.3	69	0.38	26	
		6-12	--	46.5	70	0.89	62	--	--	--	--	--	--	--	46.5	70	0.89	62	
6T-48	1	0-6	--	--	94	--	--	1.4	0.45	0.0	0.36	--	--	--	--	--	--		
		6-12	--	--	107	--	--	--	--	--	--	--	--	--	107	--	--	--	

(Continued)

(14 of 16 sheets)

Table A3 (Continued)

Site No.	Map Sheet	Section A. Site Data							Section B. Soil Data										
		Location		Topog-raphy Class	Topo-graphic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA Texture by Wt, %			Type	Atter-berg Limits			USCS Type		
		Grid Coor-dinates	Sheet							Sand	Silt	Clay		Fines %	LL	PL	PI	SM	
6T-49	5448IV	995964	Low	Bottomland flat	0	Savanna	Rambutan orchard	0-6 6-12	-- 36	-- 7	-- 7	-- LS	-- 16	-- 18	-- NP	-- SM	-- 1.05	-- 2.63	
6T-50	5448IV	820970	Low	Bottomland flat	0	Savanna	Rubber plantation	0-6 6-12	-- 60	-- 21	-- 19	-- SL	-- 44	-- 38	-- 24	-- 14	-- SC	-- 0.95	-- 2.61
6T-51	5448IV	877880	Low	Lower slope	25	Savanna	Rubber plantation	0-6 6-12	-- 79	-- 16	-- 5	-- GLS	-- 14	-- 15	-- NP	-- SM	-- --	-- 2.57	
6T-52	5349II	145098	Low	Terrace flat	0	Short-grass prairie	Rubber plantation	0-6 6-12	-- 57	-- 29	-- 14	-- SL	-- 53	-- 25	-- 20	-- 5	-- CL-ML	-- 1.55	-- 2.61
6T-53	5448IV	933858	Low	Upland flat	0	Low scrub	Rubber plantation	0-6 6-12	-- 62	-- 19	-- 19	-- SL	-- 39	-- 46	-- 30	-- 16	-- SM	-- 1.65	-- 2.59
6T-54	5448IV	790954	High	Upper slope	22	Tall scrub savanna	Rubber plantation	0-6 6-12	-- 49	-- 40	-- 11	-- VCL	-- 26	-- 56	-- 37	-- 19	-- LC	-- --	-- 3.30
6T-55	5348I	130952	High	Terrace slope	6	Low scrub; short-grass prairie	Undisturbed	0-6 6-12	-- 50	-- 34	-- 16	-- GL	-- 41	-- 29	-- 22	-- 7	-- SM-SC	-- --	-- 2.78
6T-56	5448III	820834	Low	Bottomland flat	0	Savanna	Logged	0-6 6-12	-- 55	-- 39	-- 6	-- SL	-- 54	-- 76	-- 44	-- 32	-- MH	-- --	-- 2.65
6T-57	5448III	817816	Low	Bottomland flat	0	Short-grass prairie	Grazed	0-6 6-12	-- 94	-- 4	-- 2	-- S	-- 9	-- --	-- NP	-- SP-SM	-- 2.47	-- 2.63	
6T-58	5349II	150065	Low	Bottomland flat	0	Tall scrub woodland	Undisturbed	0-6 6-12	-- 55	-- 28	-- 17	-- SL	-- 51	-- 22	-- 15	-- 7	-- CL-ML	-- 0.95	-- 2.63
6T-59	5349II	159089	Low	Bottomland flat	0	Low scrub; short-grass prairie	Rubber plantation	0-6 6-12	-- 20	-- 38	-- 42	-- C	-- 83	-- 52	-- 27	-- 25	-- CH	-- 0.95	-- 2.62
6T-60	5349II	187064	High	Upland flat	0	Tall scrub forest	Undisturbed	0-6 6-12	-- 51	-- 35	-- 14	-- L	-- 59	-- 18	-- NP	-- ML	-- 0.55	-- 2.64	
6T-61	5348I	152984	High	Upland flat	0	Low scrub	Undisturbed	0-6 6-12	-- 60	-- 28	-- 12	-- GSL	-- 29	-- 24	-- 16	-- 8	-- SC	-- 0.95	-- 2.99
6T-62	5448IV	767963	Low	Bottomland depression	0	Savanna	Rubber plantation	0-6 6-12	-- 70	-- 21	-- 9	-- GSL	-- 19	-- 36	-- 24	-- 12	-- SC	-- --	-- 2.85

(Continued)

(15 of 16 sheets)

Table A3 (Concluded)

Site No.	No. of Visits	Depth of Layer in.	Dry Density lb/cu ft	Section C. Trafficalility Data								Depth to Water Table in.									
				Wet-Season Condition				Sheargraph													
				MC, %	CI	RI	RCI	c _u psi	φ _u	Tan _{αur} psi	Tan _{αur}										
6T-49	1	0-6	--	15.4	65	1.89	122	0.7	0.42	0.1	0.38	--	15.4	65	1.89	122	--	--	--	--	12
		6-12	--	13.1	125	2.45	305					--	13.1	125	2.45	305	--	--	--	--	
6T-50	1	0-6	--	19.6	88	1.02	90	0.7	0.51	0.7	0.47										
		6-12	--	20.3	117	1.07	125					--									
6T-51	1	0-6	--	5.4	750+	--	--	0.0	0.78	1.2	0.30										
		6-12	--	7.4	750+	--	--					--									
6T-52	1	0-6	--	16.6	595	--	--	0.3	0.70	0.6	0.45										
		6-12	--	18.2	400	--	--					--									
6T-53	1	0-6	--	18.3	160	1.35	215	0.9	0.38	0.0	0.38										
		6-12	--	17.2	232	1.21	280					--									
6T-54	1	0-6	--	--	644+	--	--	1.0	0.62	0.8	0.47										
		6-12	--	--	750+	--	--					--									
6T-55	1	0-6	--	--	612+	--	--	1.0	0.73	0.0	0.34										
		6-12	--	--	750+	--	--					--									
6T-56	1	0-6	--	114.7	15	0.71	11	--	--	--	--	--	114.7	15	0.71	11	--	--	--	--	1
		6-12	--	115.2	30	0.97	21					--	115.2	30	0.97	21	--	--	--	--	
6T-57	1	0-6	--	16.5	162	1.86	302	0.8	0.40	0.0	0.84										
		6-12	--	21.0	240	2.41	577					--									
6T-58	1	0-6	--	17.9	132	0.49	65	1.1	0.65	1.2	0.49										
		6-12	--	17.7	105	0.95	96					--									
6T-59	1	0-6	--	26.5	104	0.52	54	0.0	0.65	0.5	0.55										
		6-12	--	28.5	194	0.47	91					--									
6T-60	1	0-6	--	18.2	112	0.30	34	1.0	0.67	1.2	0.47										
		6-12	--	17.7	110	0.52	57					--									
6T-61	1	0-6	--	--	428+	--	--	1.8	0.58	0.8	0.36										
		6-12	--	--	750+	--	--					--									
6T-62	1	0-6	--	--	390	--	--	1.4	0.55	1.0	0.47										
		6-12	--	--	718+	--	--					--									

Table A4
Soil Moisture-Strength Study
Summary of Site, Soil, and Trafficality Data

Site No.	Map Sheet	Grid Coor- di- nates	Location	Section A. Site Data						Section B. Soil Data											
				Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA Texture by Wt. %			By Wt. %			Atter- berg Limits			USCS Type		
<u>Chiang Mai Area</u>																LL	PL	PI	Type	Organic Content %	Specific Gravity
PD241	4867IV	017901	Low	Bottomland flat	0	Short-grass prairie	Lawn	0-6 6-12	35 31	49 49	16 20	L	77 75	26 25	19 18	7	CL-ML CL-ML	2.87 0.95	--	2.67	
PD242	4867IV	020902	High	Terrace flat	4	Low scrub savanna	Undisturbed	0-6 6-12	73 69	20 24	7	SL	44 --	16 14	16 14	0	SM	0.78	--	0.55	
PD243	4767I	997917	Low	Bottomland flat	1	Short-grass prairie	Lawn	0-6 6-12	39 42	45 45	16 13	L	72 69	24 18	16 13	8	CL	1.55	--	0.62	
T81	4867III	013761	High	Natural levee	0	Short-grass prairie	Lawn	0-6 6-12	39 38	42 44	19 18	L	77 81	36 30	24 20	10	ML	2.75	--	2.08	
T82	4867III	017765	High	Natural levee	1	Short-grass prairie	Lawn	0-f 6-12	22 20	50 50	28 19	CL	86 86	49 43	29 25	20	ML	3.13	--	2.23	
T83	4767II	917791	High	Upper slope	20	Forest	Undisturbed	0-6 6-12	39 37	33 27	28 36	CL	73 70	65 56	45 33	20 23	MH	5.74	2.59	3.27	
T84	4766I	896587	Low	Bottomland flat	0	Short-grass prairie	Cultivated	0-6 6-12	46 26	32 40	22 34	L	61 79	35 38	18 20	17	CL	2.08	2.63	1.65	
T85	4766III	664413	Low	Terrace flat	5	Short-grass prairie	Undisturbed	0-6 6-12	67 54	22 27	11 19	SL	41 56	17 22	17 16	0	SM	0.95	--	0.87	
T86	4766III	654433	Low	Terrace flat	2	Short-grass prairie	Cultivated	0-6 6-12	31 32	47 50	22 18	L	72 79	42 30	21 17	21	CL	1.45	--	0.86	
T87	4766III	657445	Low	Terrace flat	1	Short-grass prairie	Cultivated (idle)	0-6 6-12	85 86	9 9	6 5	LS	21 17	-- --	-- NP	NP	SM	0.46	--	0.32	
TS19B	4867IV	165867	Low	Terrace flat	0	Woodland	Undisturbed	0-6 6-12	71 79	22 16	7 5	SL	43 32	-- --	-- NP	NP	SM	0.70	--	1.04	
TS19C	4867IV	162866	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	71 69	21 13	8 18	SL	36 37	-- 24	-- 13	11	SM	0.86	--	0.39	
TS19E	4867IV	161862	High	Lower slope	3	Low scrub	Cultivated	0-6 6-12	77 75	20 21	3 4	LS	32 33	-- --	-- NP	NP	SM	0.46	--	0.78	
<u>Khon Kaen Area</u>																LL	PL	PI	Type	Organic Content %	Specific Gravity
PD246	5560II	667076	High	Terrace flat	1	Short-grass prairie	Cultivated	0-6 6-12	78 77	15 15	7 8	LS	33 37	16 14	16 14	0	SM	0.95	--	0.62	
PD247	5560II	666077	Low	Bottomland flat	0	Short-grass prairie	Grazed	0-6 6-12	70 62	19 26	11 12	SL	43 48	17 14	17 14	0	SM	1.05	2.61	0.95	
PD248	5560II	662083	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	76 75	17 17	7 8	SL	38 39	16 14	16 14	0	SM	0.78	--	0.46	
PD249	5560II	657085	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grazed)	0-6 6-12	61 61	27 23	12 16	SL	57 57	20 18	18 17	2	ML	0.78	2.62	0.46	
T89	5560II	689234	Low	Upland flat	1	Tall-grass prairie	Cultivated	0-6 6-12	75 81	20 14	5 5	LS	32 31	-- --	-- NP	NP	SM	0.86	--	0.62	
T810	5560II	689230	High	Upper slope	3	Low scrub savanna	Cultivated	0-6 6-12	68 74	24 18	8 8	SL	43 39	17 --	15 --	2	SM	0.78	--	0.62	
T811	5560II	658190	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grazed)	0-6 6-12	82 77	13 20	5 3	LS	33 40	-- 13	-- 13	0	SM	0.46	--	2.64	
T812	5560II	657099	High	Natural levee	1	Short-grass prairie	Grazed	0-6 6-12	48 41	41 42	11 17	L	71 76	27 26	22 20	5	ML	0.86	--	0.78	
T813	5560II	658089	High	Natural levee	1	Short-grass prairie	Grazed	0-6 6-12	43 43	44 43	13 14	L	80 80	30 25	23 19	7	ML	1.65	--	0.78	
T814	5560II	659085	Low	Bottomland flat	0	Short-grass prairie	Cultivated (grazed)	0-6 6-12	26 13	46 51	28 36	CL	84 93	17 41	19 18	18	CL	1.45	--	1.05	
T856A	5560II	749173	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6 6-12	43 41	34 35	23 24	L	67 68	26 32	14 17	12	CL	0.70	--	0.92	
T856B	5560II	748173	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	47 41	32 35	21 24	L	66 74	26 32	15 17	11	CL	0.62	--	0.78	
T856D	5560II	747172	Low	Terrace slope	1	Short-grass prairie	Cultivated (idle)	0-6 6-12	-- 44	-- 33	-- 23	L	-- 66	-- 29	-- 18	11	CL	0.86	--	1.24	
<u>Makhon Sawan Area</u>																LL	PL	PI	Type	Organic Content %	Specific Gravity
PD251	5058III	215324	High	Terrace flat	1	Short-grass prairie	Lawn	0-6 6-12	25 25	44 40	31 35	CL	80 81	47 48	21 23	26 25	CL	2.87	--	2.23	
T815	4958II	026467	Low	Bottomland flat	1	Short-grass prairie	Cultivated (idle)	0-6 6-12	20 11	48 41	32 48	SICL	86 92	32 45	19 22	13 23	CL	1.45	--	0.78	

(Continued)

* G = gravelly; VG = very gravelly.

(1 of 6 sheets)

Table A4 (Continued)

Site No.	No. of Visits	Section C. Tractorability Data												Depth to Water Table† in.						
		Wet-Season Condition						High-Moisture Condition												
		Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c _u psi	Tan θ _u	a _{ur} psi	Tan θ _{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c _u psi	Tan θ _u	a _{ur} psi	Tan θ _{ur}
<u>Chiang Mai Area</u>																				
PD241	19	0-6 6-12	94.8 97.6	25.9 20.5	100+ 212+	-- 0.68	-- 150+	--	--	--	--	--	28.2 19.4	35 96	-- 0.29	-- 28				1
PD242	18	0-6 6-12	93.4 97.8	12.8 11.7	156 177	-- 2.60	-- 472	3.2	0.58	0.7	0.43									
PD243	18	0-6 6-12	97.9 109.8	20.4 15.0	192+ 348+	-- 0.58	-- 184+	3.8	0.58	0.9	0.70	98.7 113.8	19.2 15.3	90 121	-- 0.44	-- 53				23
TS1	14	0-6 6-12	86.2 89.3	19.4 15.6	497+ 661+	-- 1.01	-- 491+	--	--	--	--									
TS2	16	0-6 6-12	79.5 84.9	28.8 26.2	191 265+	-- 1.02	-- 247	3.1	0.68	0.2	0.63									
TS3	10	0-6 6-12	67.8 63.5	42.3 33.7	60 106	-- 1.26	-- 141	2.6	0.68	0.7	0.70									
TS4	14	0-6 6-12	89.8 98.0	29.0 25.2	68 126	-- 0.86	-- 109	3.3	0.19	1.6	0.19	--	29.6 25.1	51 102	-- 0.69	-- 70				0
TS5	15	0-6 6-12	91.1 89.3	11.8 11.5	297+ 369+	-- 1.64	-- 421+	1.5	0.78	1.2	0.75									
TS6	19	0-6 6-12	91.7 104.6	28.9 21.2	78 137+	-- 0.78	-- 103+	--	--	--	--	--	34.5 23.6	60 129	-- 0.35	-- 45				0
TS7	8	0-6 6-12	88.3 86.6	28.6 28.8	173 279	-- 0.99	-- 276	--	--	--	--	--	29.3 29.9	136 224	-- 0.77	-- 172				0
TS19B	8	0-6 6-12	93.2 95.4	17.2 14.3	263 297	-- --	-- --	--	--	--	--									
TS19C	9	0-6 6-12	96.0 101.6	21.9 17.5	170 167	-- 0.37	-- 62	--	--	--	--	--	21.6 20.1	169 147	-- 0.17	-- 25				1
TS19E	9	0-6 6-12	90.2 94.0	11.2 10.2	142 239	-- 2.14	-- 474	--	--	--	--									
<u>Khon Kaen Area</u>																				
PD246	7	0-6 6-12	96.4 100.1	12.1 11.7	181+ 230+	-- 2.15	-- 442+	0.6	0.76	0.3	0.60									
PD247	6	0-6 6-12	101.1 105.2	17.3 16.5	151 200+	-- 0.55	-- 117+	--	--	--	--	--	16.2 17.1	92 153+	-- 0.35	-- 54+				1
PD248	7	0-6 6-12	99.7 104.6	18.9 15.6	184+ 344+	-- 0.86	-- 332+	0.8	0.68	0.8	0.47	--	19.1 15.1	188+ 406+	-- 0.29	-- 118+				0
PD249	7	0-6 6-12	95.8 97.4	17.5 15.1	211+ 504+	-- 1.09	-- 547+	0.6	0.84	0.9	0.32	--	18.8 16.6	185 388+	-- 0.80	-- 310+				18
TS9	6	0-6 6-12	97.5 99.1	12.4 12.2	87 160+	-- 1.59	-- 242+	0.8	0.58	0.4	0.60									
TS10	4	0-6 6-12	89.5 93.2	13.9 13.4	95 101	-- 1.87	-- 193	1.1	0.54	0.6	0.47	--	17.0 16.8	187 246	-- 0.42	-- 103	0.7 0.49	0.6 0.47		4
TS11	4	0-6 6-12	102.6 103.5	16.2 16.1	180 240	-- 0.78	-- 190	0.7	0.49	0.6	0.47	--	17.0 16.8	187 246	-- 0.42	-- 103	0.7 0.49	0.6 0.47		4
TS12	6	0-6 6-12	96.8 97.2	19.3 20.4	182 178	-- 0.62	-- 102	2.2	0.44	0.2	0.50									
TS13	7	0-6 6-12	91.1 92.4	19.5 20.1	191+ 157	-- 0.69	-- 115	2.2	0.64	0.5	0.54									
TS14	6	0-6 6-12	92.8 91.0	22.3 26.2	215+ 206+	-- 0.98	-- 209+	0.0	1.15	0.0	0.58	--	27.2 28.1	68 115	-- 0.76	-- 87	0.0 0.15	1.15 0.0	0.58	3
TS56A	4	0-6 6-12	91.9 95.4	19.7 20.0	118 214+	-- 0.90	-- 197+	--	--	--	--	95.4 97.6	19.7 20.4	94 172	-- 0.78	-- 134				6
TS56B	3	0-6 6-12	98.0 99.3	21.3 21.9	86 117	-- 0.78	-- 91	--	--	--	--	--	21.6 22.0	82 101	-- 0.76	-- 77				0
TS56D	3	0-6 6-12	99.5 93.0	17.4 21.1	131 123	-- 0.74	-- 91	--	--	--	--	98.2 92.3	17.3 20.7	142 116	-- 0.73	-- 85				20
<u>Makhon Savan Area</u>																				
PD251	8	0-6 6-12	81.2 89.3	21.8 21.7	232+ 362+	-- 1.12	-- 366+	2.2	0.52	3.0	0.55									
TS15	9	0-6 6-12	74.9 83.0	26.2 25.2	112+ 229+	-- 1.09	-- 246+	3.7	0.43	1.5	0.65	--	25.9 25.4	66 122	-- 0.88	-- 107				0

(Continued)

** c_u, ultimate soil-to-soil cohesion; θ_u, ultimate soil-to-soil angle of internal friction; a_{ur}, ultimate soil-to-rubber adhesion; α_{ur}, ultimate soil-to-rubber angle of friction.

† Plus (+) denotes depth of water above surface.

(2 of 4 sheets)

Table A4 (Continued)

Site No.	Section A. Site Data						Depth of Layer in.	Section E. Soil Data						Organic Content %	Specific Gravity				
	Map Sheet	Grid Coor- di-nates	Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation		USDA Texture by Wt. %			Atter-berg Limits	Type							
								Sand	Silt	Clay									
TS16	5058III	171364	Low	Bottomland depression	1	Low scrub savanna	Cultivated	0-6 6-12	10 5	34 33	56 62	C C	96 98	64 81	32 35	32 46	MH CH	2.35 1.88	-- 2.70
TS17	5057IV	206249	Low	Bottomland flat	1	Short-grass prairie	Cultivated	0-6 6-12	44 41	34 33	22 26	L L	67 68	40 43	20 24	20 19	CL CL	2.87 2.35	-- --
TS18	5057IV	207239	Low	Bottomland flat	0	Short-grass prairie	Cultivated	0-6 6-12	62 59	29 27	9 14	SL SL	54 53	20 19	16 14	4 5	CL-ML CL-ML	0.95 0.62	-- --
TS19	5057III	252102	Low	Bottomland flat	0	Short-grass prairie	Cultivated	0-6 6-12	59 49	28 33	13 18	SL L	47 57	19 24	11 12	8 12	SC CL	0.95 0.70	-- 2.64
TS20	5057III	127103	High	Terrace flat	3	Short-grass prairie	Cultivated (idle)	0-6 6-12	17 16	63 41	40 43	SIC SIC	86 89	67 68	31 29	36 39	CH CH	3.54 2.75	-- 2.69
<u>Lop Buri Area</u>																			
PD252	5155II	937287	Low	Bottomland flat	0	Low scrub savanna	Cultivated	0-6 6-12	12 11	50 47	38 42	SICL SIC	95 93	78 88	45 53	33 35	MH CH	3.27 3.00	-- 2.69
PD253	5155II	943282	High	Terrace flat	1	Short-grass prairie	Lawn	0-6 6-12	12 10	49 46	39 44	SICL SIC	93 96	69 72	30 33	39 39	CH CH	3.27 2.75	-- 2.66
PD254	5155II	951285	High	Lower slope	6	Low scrub savanna	Cultivated	0-6 6-12	12 14	39 51	49 35	SICL SICL	88 93	53 63	30 31	23 32	MH CH	2.87 2.08	-- 2.69
PD255	5254IV	213155	Low	Bottomland flat	1	Short-grass prairie	Grazed	0-6 6-12	28 30	47 46	25 24	L L	83 84	36 36	18 24	18 12	CL CL	1.65 1.77	-- 2.63
PD256	5254IV	220162	Low	Terrace flat	1	Short-grass prairie	Grazed	0-6 6-12	28 27	38 37	34 36	CL CL	83 84	58 62	25 26	33 36	CH CH	2.23 1.77	-- 2.71
TS21	5155IV	771468	Low	Bottomland flat	1	Short-grass prairie	Cultivated (idle)	0-6 6-12	30 30	36 33	34 37	CL CL	78 79	53 55	18 18	35 37	CH CH	1.25 1.05	-- 2.70
TS22	5155IV	794479	Low	Bottomland flat	1	Short-grass prairie	Cultivated (idle)	0-6 6-12	36 34	33 34	31 32	CL CL	74 78	49 47	20 17	29 30	CL CL	1.05 1.05	-- --
TS23	5155IV	808487	Low	Bottomland flat	1	Low scrub savanna	Cultivated (idle)	0-6 6-12	31 27	41 39	28 34	CL CL	79 83	42 51	19 18	23 33	CL CH	1.55 1.15	-- 2.68
TS24	5155IV	834489	Low	Lower slope	3	Savanna	Undisturbed	0-6 6-12	43 41	32 28	25 31	L CL	70 70	37 41	21 23	16 18	CL CL	2.60 1.65	-- 2.82
TS25	5154I	071039	Low	Terrace flat	0	Short-grass prairie	Cultivated	0-6 6-12	9 12	84 78	7 10	SIL SIL	96 94	17 16	17 16	0 0	ML ML	0.85 0.62	-- 2.60
TS25A	5154II	084012	Low	Terrace flat	0	Savanna	Cultivated (idle)	0-6 6-12	30 29	58 51	12 20	SIL SIL	78 80	27 21	22 19	5 2	ML ML	1.05 0.62	-- --
TS25B	5154II	084013	Low	Terrace flat	0	Tall scrub savanna	Grazed	0-6 6-12	42 43	42 41	16 16	L L	66 44	29 23	22 17	7 6	ML SM-SC	1.05 0.62	-- --
TS26	5153I	912764	Low	Bottomland flat	0	Short-grass prairie	Cultivated	0-6 6-12	16 13	49 49	35 38	SICL SICL	80 97	75 74	38 31	37 43	MH CH	3.20 2.08	-- --
<u>Bangkok Area</u>																			
PD244	5152III	740113	Low	Bottomland depression	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	6 6	41 37	53 57	SIC C	99 99	72 67	27 23	45 44	CH CH	1.98 1.55	-- 2.68
PD245	5152IV	711319	Low	Bottomland flat	1	Short-grass prairie	Cultivated	0-6 6-12	11 11	41 41	48 48	SIC SIC	98 98	67 66	29 27	38 39	CH CH	3.00 1.65	-- --
TS8	5052II	592229	Low	Bottomland flat	0	Short-grass prairie	Cultivated	0-6 6-12	13 12	43 41	44 47	SIC SIC	94 94	65 66	29 29	36 37	CH CH	2.08 1.45	-- 2.71
<u>Fran Buri Area</u>																			
PD257	4948I	040904	High	Terrace flat	1	Short-grass prairie	Lawn	0-6 6-12	72 75	23 19	5 6	SL SL	37 33	-- --	-- NP	NP	SM	0.70 0.55	-- --
TS29	4948II	062776	Low	Bottomland flat	1	Short-grass prairie	Cultivated (idle)	0-6 6-12	68 54	21 17	11 29	SL SCL	45 49	18 28	13 11	5 17	SM-SC	0.78 0.55	2.63 --
TS30	4948II	053772	High	Terrace slope	3	Tall scrub savanna	Cultivated	0-6 6-12	64 62	24 24	12 12	SL SL	51 48	18 17	15 13	3 4	ML SM-SC	1.05 0.62	-- 2.67
TS31	4948II	951732	High	Terrace flat	0	Tall scrub woodland	Undisturbed	0-6 6-12	44 38	45 44	11 10	L L	70 73	21 20	15 13	6 7	CL-ML CL-ML	1.33 0.78	-- --
TS32	4948II	944730	High	Terrace flat	1	Tall-grass prairie	Undisturbed	0-6 6-12	48 43	40 43	12 14	L L	64 66	18 17	14 12	4 5	CL-ML CL-ML	0.95 0.78	-- --
TS33	4948II	925730	High	Terrace flat	0	Low scrub	Undisturbed	0-6 6-12	27 30	55 46	18 24	SIL L	85 86	28 23	19 16	9 7	CL CL	1.65 1.65	-- --
TS34	4948II	967679	High	Terrace flat	1	Short-grass prairie	Cultivated (idle)	0-6 6-12	39 34	43 39	18 27	L L	76 80	26 27	15 14	9 13	CL CL	1.65 1.15	-- 2.65

(Continued)

(3 of 6 sheets)

Table A4 (Continued)

Site No.	No. of Visits	Section C. Trafficability Data														Depth to Water Table in.					
		Wet-Season Condition							High-Moisture Condition												
		Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCL	c _u psi	Tan φ _u	a _{ur} psi	Tan α _{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCL	c _u psi	Tan φ _u	a _{ur} psi	Tan α _{ur}	
TS16	6	0-6 6-12	84.7 82.1	32.8 37.4	89 121	-- 1.15	-- 126	0.7	0.70	1.3	0.43	--	37.5 37.3	52 96	-- 1.05	-- 101				22	
TS17	8	0-6 6-12	94.9 97.5	21.3 22.0	144+ 226+	-- 1.10	-- 242+	3.5	0.45	1.3	0.51										
TS18	8	0-6 6-12	91.1 86.2	13.5 7.2	453+ 746+	-- --	-- --	2.2	0.43	1.4	0.40	--	16.0 7.1	378+ 722+	-- --	-- --				0	
TS19	4	0-6 6-12	112.1 109.9	14.0 18.1	108 125	-- 0.63	-- 79	3.0	0.43	2.0	0.45	--	15.0 19.2	62 105	-- 0.53	-- 56				0	
TS20	8	0-6 6-12	76.8 74.3	28.6 28.7	186+ 271+	-- 1.20	-- 285+	3.7	0.49	1.9	0.38										
<u>Lop Buri Area</u>																					
PD252	13	0-6 6-12	63.1 66.8	38.6 38.2	125 203	-- 1.12	-- 228	2.7	0.28	0.9	0.65	--	39.0 41.9	117 154	-- 1.06	-- 163				48	
PD253	13	0-6 6-12	72.1 76.7	35.4 33.5	126 233+	-- 1.12	-- 263+	5.4	0.28	0.6	0.30										
PD254	13	0-6 6-12	77.0 88.6	30.6 31.5	97 252+	-- 1.18	-- 279+	3.0	0.32	1.6	0.34										
PD255	14	0-6 6-12	87.5 95.1	26.5 24.0	100 124	-- 0.94	-- 117	3.8	0.97	0.8	0.70	--	29.1 27.2	70 88	-- 0.92	-- 81				3	
PD256	14	0-6 6-12	87.7 90.8	28.1 26.3	136 168	-- 1.07	-- 180	2.6	0.84	0.9	0.68	--	30.5 27.3	96 108	-- 1.01	-- 109				24	
TS21	9	0-6 6-12	95.0 97.1	25.1 24.2	100 106	-- 1.08	-- 115	2.6	0.58	0.6	0.50	--	27.9 26.6	55 61	-- 1.22	-- 74				29	
TS22	7	0-6 6-12	95.0 94.9	27.0 25.0	66 121+	-- 0.92	-- 108+	4.3	0.47	2.1	0.45	--	28.4 25.8	65 91	-- 0.68	-- 62				20	
TS23	10	0-6 6-12	90.8 90.9	28.8 25.3	74 225+	-- 1.07	-- 245+	3.1	0.32	0.7	0.48	--	38.5 25.4	51 187+	-- 0.59	-- 110+	1.8 0.02	0.1 0.18		9	
TS24	9	0-6 6-12	87.7 85.9	26.0 26.0	146+ 236+	-- 1.16	-- 278+	1.8	0.54	1.0	0.49	--	26.6 27.6	111 159	-- 0.99	-- 157	0.7 0.36	1.3 0.40		0	
TS25	10	0-6 6-12	82.4 104.3	16.3 12.2	622+ 750+	-- --	-- --	--	--	--	--	--	17.7 13.0	614+ 750+	-- --	-- --				0	
TS25A	5	0-6 6-12	91.8 98.0	24.6 20.5	288+ 395+	-- 0.37	-- 137+	--	--	--	--										
TS25B	5	0-6 6-12	98.6 96.5	22.5 21.5	223 265+	-- 0.54	-- 141+	--	--	--	--	--	23.5 21.7	119 152	-- 0.54	-- 82				0	
TS26	11	0-6 6-12	64.1 78.7	51.8 39.7	121 147	-- 0.84	-- 125	--	--	--	--	--	58.4 44.8	116 139	-- 0.50	-- 70				2	
<u>Bangkok Area</u>																					
PD244	15	0-6 6-12	76.0 86.4	39.5 35.0	47 72	-- 0.97	-- 70	--	--	--	--	--	41.7 37.4	32 57	-- 0.80	-- 46				0	
PD245	12	0-6 6-12	78.8 82.6	34.8 34.2	103 114	-- 0.99	-- 105	--	--	--	--	--	38.2 35.1	55 61	-- 0.75	-- 46				0	
TS8	17	0-6 6-12	74.6 72.7	44.3 49.1	63 64	-- 0.93	-- 59	3.5	0.18	1.4	0.19	--	52.2 56.8	47 55	-- 0.64	-- 35				0	
<u>Pran Buri Area</u>																					
PD257	3	0-6 6-12	104.0 101.4	12.9 10.1	203+ 248+	-- 1.57	-- 257	2.5	0.54	0.0	0.63										
TS29	11	0-6 6-12	109.5 112.7	14.6 16.5	308 263	-- 0.86	-- 227	2.8	0.45	0.1	0.40	--	113.8 113.6	16.6 16.8	249 174	-- 0.74	-- 129				0
TS30	4	0-6 6-12	101.0 112.0	15.4 13.6	72 144+	-- 1.18	-- 188+	--	--	--	--	--									
TS31	5	0-6 6-12	95.6 99.0	17.2 16.8	77 70+	-- 0.72	-- 55+	3.0	0.73	0.7	0.56										
TS32	6	0-6 6-12	97.6 101.2	15.2 13.2	81 90+	-- 0.92	-- 110+	3.2	0.44	1.8	0.60										
TS33	5	0-6 6-12	94.7 103.8	20.8 16.9	132 148+	-- 0.76	-- 117+	4.4	0.46	1.7	0.54										
TS34	4	0-6 6-12	95.5 97.8	18.8 17.7	41 66	-- 1.18	-- 95	2.4	0.63	1.4	0.63										

(Continued)

(4 of 6 sheets)

Table A4 (Continued)

Site No.	Map Sheet	Grid Coor- di- nates	Section A. Site Data						Depth of Layer in.	Section B. Soil Data						Organic Content %	Specific Gravity			
			Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation	Land Use	USDA Texture by Wt. %			Atter-berg %	Con- tinuity Limits								
								Sand	Silt	Clay	Type	Fines	LL	PL	PI					
<u>Chanthaburi Area</u>																				
PD258	5448IV	857957	High	Upper slope	2	Short-grass prairie	Cultivated (idle)	0-6 6-12	25 23	36 36	39 41	CL C	82 83	50 50	29 28	21 22	MH CH	3.27 1.58	-- 2.67	
PD259	5448IV	805932	High	Upper slope	2	Short-grass prairie	Cultivated	0-6 6-12	28 24	47 47	25 29	L CL	90 90	53 56	40 42	13 14	MH MH	3.00 2.75	2.88 2.88	
TS35	5149II	059028	High	Terrace flat	0	Forest	Cultivated	0-6 6-12	51 61	40 25	9 14	L SL	48 51	16 15	14 11	2 4	SM CL-ML	0.71 0.55	-- --	
TS36	5149II	060039	High	Terrace slope	4	Tall scrub woodland	Cultivated	0-6 6-12	47 41	35 37	18 22	L L	63 67	25 27	15 16	10 11	CL CL	1.55 0.78	-- 2.69	
TS37	5249III	319085	High	Lower slope	2	Short-grass prairie	Lawn	0-6 6-12	63 61	11 9	26 30	SCL SCL	41 44	25 28	13 14	12 14	SC SC	1.45 1.33	-- 2.61	
TS38	5249III	385046	Low	Bottomland flat	2	Short-grass prairie	Cultivated (grazed)	0-6 6-12	16 19	43 46	41 35	SIC SiCL	93 89	107 96	75 68	32 28	MH MH	2.60 12.35	2.29 2.40	
TS39	5249II	484093	Low	Bottomland flat	1	Short-grass prairie	Cultivated	0-6 6-12	76 68	20 19	4 13	LS SL	35 43	-- 13	-- 13	NP 0	SM SM	0.86 0.46	-- 2.62	
TS40	5448IV	881961	Low	Bottomland flat	0	Short-grass prairie	Lawn	0-6 6-12	7 8	52 51	41 41	SIC SIC	92 92	71 66	46 38	25 28	MH MH	4.15 3.62	-- 2.57	
TS41	5448IV	929843	Low	Terrace flat	2	Woodland	Cultivated	0-6 6-12	71 66	9 11	20 23	SL SCL	34 39	29 25	20 14	9 11	SC SC	1.77 1.25	-- 2.60	
TS42	5448IV	934846	High	Lower slope	3	Tall scrub savanna	Cultivated	0-6 6-12	58 57	16 14	26 29	SCL SCL	43 43	43 42	25 23	18 19	SC SC	3.41 2.87	-- 2.61	
<u>Hat Yai Area</u>																				
PD260	5132III	657756	High	Terrace flat	1	Woodland	Cultivated	0-6 6-12	61 65	31 22	8 13	SL SL	51 51	22 19	18 15	4 4	CL-ML CL-ML	1.45 0.78	-- 2.64	
TS43	5032III	354874	Low	Natural levee	1	Low scrub	Cultivated	0-6 6-12	56 52	28 30	16 18	SL SL	58 59	33 31	22 20	11 11	CL CL	2.23 1.15	-- --	
TS44	5032II	430760	High	Lower slope	5	Forest	Undisturbed	0-6 6-12	53 50	38 34	9 16	SL GL	55 28	21 26	18 17	3 9	ML GC	1.77 0.78	-- 2.96	
TS45	5132III	667752	High	Lower slope	8	Woodland	Cultivated	0-6 6-12	58 53	25 26	17 21	SL SCL	49 46	27 29	18 18	9 11	SC SC	1.98 1.65	-- --	
TS46	5132III	659761	Low	Bottomland flat	1	Short-grass prairie	Cultivated (grazed)	0-6 6-12	38 43	48 43	14 14	L L	74 70	34 21	24 16	10 5	ML CL-ML	2.35 0.95	-- 2.63	
TS47	5132III	702814	High	Lower slope	2	Forest	Cultivated	0-6 6-12	35 32	38 32	27 35	CL CL	75 62	58 58	32 33	26 25	MH MH	3.96 1.15	-- 2.87	
TS48	5132III	706814	Low	Bottomland flat	0	Short-grass prairie	Cultivated	0-6 6-12	32 29	54 47	14 14	SIL L	79 80	23 26	15 14	8 12	CL CL	1.33 0.70	-- 2.67	
TS49	5132III	785925	Low	Terrace flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	25 19	47 40	28 41	CL C	82 88	103 70	68 35	35 35	MH MH	14.35 4.90	-- --	
TS50	132IV	770946	Low	Terrace flat	0	Low scrub savanna	Undisturbed	0-6 6-12	95 93	4 4	1 3	S S	7 10	-- --	-- --	NP NP	SP-SM SP-SM	2.75 3.54	-- 2.57	

(Continued)

(5 of 6 sheets)

Table A4 (Concluded)

Site No.	No. of Visits	Section C. Trafficality Data										High-Moisture Condition										
		Wet-Season Condition					Sheargraph					Dry					Sheargraph					Depth to Water Table in.
		Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c _u psi	Tan ϕ_u	a _{ur} psi	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c _u psi	Tan ϕ_u	a _{ur} psi	Tan α_{ur}	in.	
<u>Chanthaburi Area</u>																						
PD258	13	0-6 6-12	86.4 84.2	30.9 29.4	160 206	-- 1.06	-- 220	--	--	--	--	--	--	--	--	--	--	--	--	--	0	
PD259	12	0-6 6-12	62.2 63.4	43.4 43.5	78 132	-- 1.34	-- 181	3.7	0.70	0.0	0.65	--	--	--	--	--	--	--	--	--	10	
TS33	8	0-6 6-12	106.8 110.4	12.7 12.4	77 103	-- 0.69	-- 78	2.1	0.65	0.2	0.58	--	--	--	--	--	--	--	--	--	16	
TS36	8	0-6 6-12	102.7 101.6	16.2 15.2	126 190+	-- 0.88	-- 166+	3.9	0.65	0.5	0.60	--	--	--	--	--	--	--	--	--	22	
TS37	8	0-6 6-12	102.8 101.8	12.4 13.7	234+ 345+	-- 1.23	-- 460+	4.2	0.23	1.5	0.36	--	--	--	--	--	--	--	--	--	0	
TS38	8	0-6 6-12	46.9 45.3	89.8 114.2	120 120	-- 0.48	-- 56	--	--	--	--	--	--	--	--	93.7 105.4	118 113	-- 0.30	-- 34	--	10	
TS39	6	0-6 6-12	102.6 116.6	18.6 13.7	146 292+	-- 0.65	-- 193+	--	--	--	--	--	--	--	--	21.7 15.0	85 183+	-- 0.48	-- 88+	--	16	
TS40	10	0-6 6-12	67.9 67.5	50.0 50.9	126 126	-- 0.74	-- 94	--	--	--	--	68.6 66.2	49.9 53.6	94 108	-- 0.54	-- 58	--	--	--	--	22	
TS41	10	0-6 6-12	92.2 98.8	19.3 18.9	98 160+	-- 0.94	-- 153+	--	--	--	--	--	--	--	--	24.9 23.3	73 111	-- 0.52	-- 58	--	22	
TS42	10	0-6 6-12	69.3 71.8	22.0 21.7	121 199+	-- 1.02	-- 204+	--	--	--	--	--	--	--	--	--	--	--	--	--	0	
<u>Hat Yai Area</u>																						
PD260	4	0-6 6-12	93.1 98.7	15.4 14.5	110 166	-- 1.44	-- 250	1.1	0.54	0.4	0.56	--	--	--	--	--	--	--	--	--	0	
TS43	6	0-6 6-12	93.0 98.4	22.4 20.1	101 117	-- 0.88	-- 106	2.3	0.47	1.6	0.32	89.0 95.8	--	--	--	--	--	--	--	--	10	
TS44	7	0-6 6-12	98.8 104.8	17.0 14.0	326+ 617+	-- 0.45	-- 253+	2.4	0.58	0.6	0.58	--	--	--	--	--	--	--	--	--	16	
TS45	4	0-6 6-12	97.2 98.6	16.4 15.2	264+ 491+	-- 1.32	-- 580+	2.0	0.59	0.3	0.64	--	--	--	--	--	--	--	--	--	22	
TS46	16	0-6 6-12	89.3 112.6	32.0 17.8	82 177+	-- 0.86	-- 149+	--	--	--	--	80.3 115.4	41.4 17.7	62 140+	-- 0.46	-- 64+	--	--	--	--	0	
TS47	10	0-6 6-12	81.9 87.8	32.8 28.6	137 230+	-- 1.22	-- 291+	2.5	0.67	1.5	0.50	--	--	--	--	--	--	--	--	--	10	
TS48	14	0-6 6-12	109.1 114.8	21.5 16.4	176+ 292+	-- 0.71	-- 181+	3.2	0.38	3.1	0.60	10. 112..	20.9 16.6	110 134	-- 0.53	-- 71	--	--	--	--	0	
TS49	13	0-6 6-12	48.2 74.5	82.6 51.3	100 116	-- 0.82	-- 96	3.4	0.38	0.0	0.49	--	--	--	--	73.5 46.0	88 87	-- 0.67	-- 58	--	16	
TS50	7	0-6 6-12	82.8 83.2	18.5 22.4	100 142	-- 1.87	-- 264	2.4	0.47	0.4	0.53	79.2 80.9	16.8 26.2	78 125	-- 1.61	-- 201	--	--	--	--	22	

Table A5
CRREL Airphoto Pattern Study
Summary of Site, Soil, and Trafficability Data

Site No.	Section A. Site Data									Depth of Layer in.	Section B. Soil Data								
	Map Sheet	Grid Coor- di- nates	Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation	Land Use	USCS			Atter- berE Limits			Organic Specific Gravity					
								Sand	Silt	Clay	Type*	Fines	LL	PL	PI	Type	%	%	%
Lop Buri Area																			
1	5154I	946123	Low	Bottomland flat	--	--	Cultivated	0-6	9	65	26	SIL	94	44	21	23	CL	0.92	2.68
2	5153IV	820785	Low	Bottomland flat	--	--	Cultivated (idle)	0-6	5	67	28	SiCL	97	57	29	28	CH	2.41	2.65
4	5155II	992256	High	Upland flat	--	--	Cultivated	0-6	48	39	13	L	60	48	25	23	CL	3.41	2.69
5	5155II	923265	Low	Bottomland flat	--	--	Cultivated (idle)	0-6	21	69	10	SIL	88	90	40	50	MH	2.67	2.59
6	5154IV	868128	Low	Natural levee	--	--	Cultivated	0-6	10	66	24	SIL	95	62	22	40	CH	1.55	2.63
7	5155II	960348	Low	Bottomland flat	--	--	Cultivated	0-6	21	69	10	SIL	88	79	37	42	MH	2.35	2.74
11	5155III	618387	Low	Natural levee	--	--	Cultivated	0-6	10	63	27	SIL	94	51	29	22	MH	1.67	2.69
14	5154II	139879	Low	Bottomland flat	--	--	Cultivated	0-6	6	81	13	SIL	96	28	23	5	ML	1.33	2.60
17	5154I	023087	Low	Natural levee	--	--	Cultivated	0-6	23	67	10	SIL	83	38	28	10	ML	1.15	2.71
19	5154I	045089	Low	Terrace flat	--	--	Cultivated	0-6	14	66	20	SIL	90	52	25	27	CH	1.00	2.67
20	5154I	048093	Low	Natural levee	--	--	Cultivated	0-6	20	67	13	SIL	85	35	22	13	CL	1.10	2.72
21	5154I	021130	Low	Bottomland flat	--	--	Cultivated	0-6	10	80	10	Si	94	40	16	24	CL	1.15	2.60
23	5154I	053164	High	Lower slope	--	--	Cultivated	0-6	19	70	11	SIL	87	45	16	29	CL	1.15	2.62
27	5154III	623946	Low	Natural levee	--	--	Cultivated	0-6	14	68	18	SIL	91	48	25	23	CL	1.10	2.74
28	5154III	657860	Low	Bottomland flat	--	--	Undisturbed	0-6	9	66	25	SIL	95	58	26	X	CH	2.94	2.72
30	5153I	891751	Low	Bottomland flat	--	--	Cultivated	0-6	35	44	21	L	70	63	24	39	CH	3.82	2.68
31	5153I	948788	Low	Bottomland flat	--	--	Cultivated (idle)	0-6	16	62	22	SIL	89	68	31	37	CH	1.65	2.71
33	5153I	963793	Low	Bottomland flat	--	--	Cultivated	0-6	18	54	28	SiCL	87	73	44	29	MH	4.70	2.58
37	5154II	040917	Low	Terrace flat	--	--	Cultivated	0-6	38	57	5	SIL	74	17	16	1	ML	0.70	2.68
39	5154II	071927	Low	Lower slope	--	--	Cultivated	0-6	33	66	1	SIL	79	—	—	NP	ML	0.63	2.65
41	5154II	081873	Low	Bottomland flat	--	--	--	0-6	18	55	27	SIL	87	40	24	16	CL	1.20	2.68
44	5154II	908952	Low	Natural levee	--	--	Cultivated	0-6	14	55	31	SiCL	90	56	27	29	CH	1.98	2.61
46	5154II	046963	Low	Natural levee	--	--	Cultivated	0-6	10	67	23	SIL	94	44	25	19	CL	0.87	2.64
47	5154II	052974	High	Lower slope	--	--	--	0-6	69	29	2	SL	39	—	—	NP	SM	0.67	2.60
48	5154II	069035	Low	Bottomland flat	--	--	Cultivated	0-6	15	84	1	Si	90	19	18	1	ML	0.70	2.60
49	5154I	123124	Low	Terrace flat	--	--	Cultivated	0-6	59	32	9	SL	58	27	26	1	ML	1.10	2.61
50	5154I	116087	Low	Natural levee	--	--	Cultivated	0-6	18	58	24	SIL	86	39	21	18	CL	—	2.70
54	5154I	011092	Low	Natural levee	--	--	Cultivated	0-6	18	50	32	SiCL	96	49	23	26	CL	—	2.65
56	5154I	972100	Low	Terrace flat	--	--	Cultivated	0-6	21	67	12	SIL	86	27	21	6	CL-ML	—	2.62

(Continued)

* G = gravelly; VG = very gravelly.

(1 of 8 sheets)

Table A5 (Continued)

Site No.	No. of Visits	Section C. Trafficality Data																			
		Wet-Season Condition					High-Moisture Condition														
		Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c _u psi	Tan ϕ_u	a _{ur} psi	Tan ϕ_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c _u psi	Tan ϕ_u	a _{ur} psi	Tan ϕ_{ur}	Depth to Water Tablet in.
<u>Lop Buri Area</u>																					
1	1	0-6	--	26.2	92	--	--														
		6-12	--	33.6	112	--	--														
2	1	0-6	--	21.8	112	--	--														
		6-12	--	28.0	127	--	--														
4	1	0-6	--	--	--	--	--														
		6-12	--	--	--	--	--														
5	1	0-6	--	38.2	82	--	--														
		6-12	--	33.7	82	--	--														
6	1	0-6	--	34.0	45	--	--														
		6-12	--	30.6	98	--	--														
7	1	0-6	--	40.8	120	--	--														
		6-12	--	42.4	144	--	--														
11	1	0-6	--	--	137+	--	--														
		6-12	--	18.6	221+	--	--														
14	1	0-6	--	27.0	142	--	--														
		6-12	--	26.5	156+	--	--														
17	1	0-6	--	21.4	112	--	--														
		6-12	--	24.6	66	--	--														
19	1	0-6	--	29.6	42	--	--														
		6-12	--	24.5	102	0.93	95														
20	1	0-6	--	28.8	37	--	--														
		6-12	--	28.1	101	0.43	43														
21	1	0-6	--	25.9	32	--	--														
		6-12	--	29.2	224+	0.19	43+														
23	1	0-6	--	32.2	66	--	--														
		6-12	--	27.8	71	0.73	52														
27	1	0-6	--	27.3	189+	--	--														
		6-12	--	25.4	300+	--	--														
28	1	0-6	--	26.5	103	--	--														
		6-12	--	20.2	286+	--	--														
30	1	0-6	--	49.0	45	--	--														
		6-12	--	34.5	116	0.49	57														
31	1	0-6	--	31.0	82	--	--														
		6-12	--	34.6	91	0.83	76														
33	1	0-6	--	44.9	85	--	--														
		6-12	--	41.6	150	0.99	149														
37	1	0-6	--	18.6	152	--	--														
		6-12	--	21.2	96	1.00	96														
39	1	0-6	--	16.8	359+	--	--														
		6-12	--	15.6	750+	--	--														
41	1	0-6	--	20.5	142	--	--														
		6-12	--	21.0	185+	0.63	117+														
44	1	0-6	--	25.8	--	--	--														
		6-12	--	37.2	--	--	--														
46	1	0-6	--	21.0	85	--	--														
		6-12	--	31.9	85	1.02	87														
47	1	0-6	--	18.8	547+	--	--														
		6-12	--	13.8	750+	--	--														
48	1	0-6	--	18.8	487+	--	--														
		6-12	--	13.8	750+	--	--														
49	1	0-6	--	22.0	103+	--	--														
		6-12	--	20.6	194+	0.46	89+														
50	1	0-6	--	24.3	104	--	--														
		6-12	--	25.1	59	1.08	64														
54	1	0-6	--	24.5	93	--	--														
		6-12	--	27.0	105	0.99	104														
56	1	0-6	--	21.4	114	--	--														
		6-12	--	22.0	148	1.00	148														

(Continued)

Table A5 (Continued)

Site No.	Map Sheet	Grid Coor- di- nates	Section A. Test Data						Section B. Moll Data															
			Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA Texture by Wt, %			Atter- berg Limits			USCE Type			Organic Content %	Specific Gravity					
									Sand	Silt	Clay	Type	Fines	LL	PL	PI								
59	5154IV	881164	Low	Upland depression	--	--	Cultivated	0-6 6-12	11 9	68 69	21 22	SIL	93 95	80 88	30 30	50 58	CH	--	2.79					
60	5154IV	881164	High	Upland flat	--	--	Cultivated	0-6 6-12	22 17	73 73	5 10	SIL	84 87	61 62	22 26	39 36	CH	--	2.69					
62	5154I	903210	High	Upland flat	--	--	Cultivated	0-6 6-12	15 17	76 76	9 7	SIL	87 83	62 66	30 30	32 36	CH	--	2.67					
63	5155II	856240	Low	Bottomland flat	--	--	Cultivated	0-6 6-12	11 16	78 74	11 10	SIL	94 91	72 73	32 31	40 42	CH	--	2.66					
64	5155II	895262	Low	Bottomland flat	--	--	Cultivated	0-6 6-12	14 21	86 67	0 12	SIL	90 86	58 58	28 26	30 32	CH	--	2.79					
65	5155III	791363	Low	Bottomland flat	--	--	--	0-6 6-12	22 18	63 69	15 13	SIL	85 87	61 63	24 24	37 39	CH	1.25	2.76					
66	5155III	028252	High	Terrace flat	--	--	Cultivated	0-6 6-12	37 40	50 49	13 11	SIL	73 67	39 40	21 21	18 19	CL	--	2.74					
67	5155III	961276	High	Terrace slope	--	--	--	0-6 6-12	29 45	51 40	20 15	SIL	79 63	60 59	27 25	33 34	CH	--	2.62					
68	5155III	945303	Low	Bottomland flat	--	--	Cultivated	0-6 6-12	17 14	76 80	7 6	SIL	90 91	52 52	24 24	28 28	CH	--	2.67					
70	5155III	765348	Low	Bottomland flat	--	--	Grazed	0-6 6-12	17 15	69 72	14 13	SIL	90 92	72 74	32 33	40 41	CH	--	2.70					
71	5155III	773402	High	Terrace flat	--	--	--	0-6 6-12	25 29	72 69	3 2	SIL	72 58	40 38	18 20	22 18	CL	--	2.68					
72	5155III	837334	High	Lower slope	--	--	Cultivated (idle)	0-6 6-12	33 34	56 56	11 10	SIL	77 76	58 57	24 28	34 29	CH	--	2.68					
73	5155III	819380	Low	Bottomland flat	--	--	Cultivated (grazed)	0-6 6-12	33 34	60 61	7 5	SIL	75 75	43 44	19 20	24 24	CL	--	2.66					
74	5155III	773389	Low	Bottomland flat	--	--	Cultivated	0-6 6-12	19 16	76 76	5 8	SIL	86 88	38 46	16 16	22 30	CL	--	2.66					
75	5155IV	737409	Low	Bottomland flat	--	--	--	0-6 6-12	20 27	64 56	16 17	SIL	86 78	78 63	27 23	51 40	CH	--	2.54					
77	5155IV	764440	Low	Bottomland flat	--	--	Cultivated (idle)	0-6 6-12	25 22	63 67	12 11	SIL	82 83	44 48	16 17	28 31	CL	--	2.59					
79	5155IV	838501	High	Lower slope	--	--	--	0-6 6-12	72 58	27 38	1 4	LS	36 51	22 27	16 15	6 12	SM-SC	--	2.71					
81	5155IV	788475	Low	Bottomland flat	--	--	--	0-6 6-12	28 24	63 68	9 8	SIL	80 85	46 51	22 20	24 31	CL	--	2.69					
83	5155IV	782570	High	Lower slope	--	--	Undisturbed	0-6 6-12	60 70	31 22	9 8	SL	42 27	32 31	22 22	10 9	SC	--	3.12					
84	5155IV	773550	Low	Bottomland flat	--	--	--	0-6 6-12	57 54	40 39	3 7	SL	50 53	29 33	16 16	13 17	CL	--	2.69					
86	5154III	732893	Low	Natural levee	--	--	Cultivated	0-6 6-12	5 5	66 67	29 28	SICL	97 97	58 55	26 25	32 30	CH	--	2.59					
87	5154III	717860	Low	Natural levee	--	--	Cultivated	0-6 6-12	9 8	66 69	25 21	SIL	95 96	55 54	25 25	30 29	CH	--	2.59					
88	5154I	908135	Low	Bottomland flat	--	--	Cultivated	0-6 6-12	19 22	54 60	7 10	SIL	87 87	76 77	43 29	33 44	CH	--	2.59					
89	5154II	025884		Terrace flat	--	--	Cultivated	0-6 6-12	14 15	63 60	23 25	SIL	91 89	39 45	21 20	18 25	CL	--	2.62					
91	5154II	038907	Low	Terrace flat	--	--	Cultivated	0-6 6-12	26 30	64 57	10 13	SIL	83 81	19 26	10 16	9 10	CL	--	2.59					
92	5154I	107078	Low	Bottomland flat	--	--	Cultivated (idle)	0-6 6-12	18 26	67 65	15 9	SIL	88 82	36 40	20 20	16 20	CL	--	2.55					
93	5154I	080120	Low	Bottomland flat	--	--	Cultivated (idle)	0-6 6-12	23 29	68 60	9 11	SIL	85 81	33 39	20 20	13 19	CL	--	2.62					
							<u>Chanthaburi Area</u>																	
100	5448IV	986980	Low	Bottomland flat	--	--	--	0-6 6-12	82 63	13 28	5 9	LS	23 41	-- 26	-- 16	NP 10	SM SC	2.16 0.91	2.64 2.66					
101	5448IV	987982	High	Upper ridge	--	--	Miscellaneous	0-6 6-12	51 43	27 28	22 29	GSCL VGCL	29 29	40 48	30 31	10 17	SM SM	1.66 1.19	2.70 2.70					
109	5448IV	885997	Low	Bottomland flat	--	--	--	0-6 6-12	78 78	20 17	2 5	LS	28 27	-- --	-- --	NP NP	SM SM	1.33 0.91	2.62 2.64					

(Continued)

(3 of 8 sheets)

Table A5 (Continued)

Site No.	No. of Visits	Section C. Trafficability Data										Depth to Water Table in. +	
		Wet-Season Condition					High-Moisture Condition						
		Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	Sheargraph c_u psi	Tan ϕ_u	Sheargraph c_u psi	Tan ϕ_u		
59	1	0-6 6-12	-- --	42.9 47.2	51 50	-- 1.28	-- 64						
60	1	0-6 6-12	-- --	30.5 27.5	93 110	-- 1.16	-- 128						
62	1	0-6 6-12	-- --	35.8 29.3	56 131+	-- 1.20	-- 157+						
63	1	0-6 6-12	-- --	44.8 39.7	27 49	-- 1.33	-- 65			19 42	1.33 56	+3.0	
64	1	0-6 6-12	-- --	34.2 30.7	59 107	-- 1.39	-- 149			59 96	1.39 133	+3.0	
65	1	0-6 6-12	-- --	31.6 27.5	54 79	-- 1.06	-- 84						
66	1	0-6 6-12	-- --	26.6 27.8	58 174+	-- 1.29	-- 225+						
67	1	0-6 6-12	-- --	30.5 26.9	74+ 159+	-- 1.01	-- 161+						
68	1	0-6 6-12	-- --	28.3 24.6	90 137	-- 0.86	-- 118						
70	1	0-6 6-12	-- --	33.2 36.3	101 129	-- 0.98	-- 126						
71	1	0-6 6-12	-- --	20.6 17.2	84 125	-- 0.71	-- 89						
72	1	0-6 6-12	-- --	38.6 30.0	94 109	-- 1.00	-- 109						
73	1	0-6 6-12	-- --	23.0 20.6	107 122	-- 0.80	-- 74						
74	1	0-6 6-12	-- --	23.8 --	56 69	-- 0.93	-- 64						
75	1	0-6 6-12	-- --	37.0 31.1	91 116	-- 1.09	-- 125						
77	1	0-6 6-12	-- --	25.0 26.8	88 84	-- 1.50	-- 126						
79	1	0-6 6-12	-- --	18.0 12.1	217+ 300+	-- --	-- --						
81	1	0-6 6-12	-- --	28.8 26.4	-- --	-- --	-- --						
83	1	0-6 6-12	-- --	23.2 --	225+ 282+	-- --	-- --						
84	1	0-6 6-12	-- --	16.2 18.2	134 199+	-- 0.85	-- 169+						
86	1	0-6 6-12	-- --	32.4 28.6	96 127	-- 1.01	-- 128			94 113	1.01 114	+4.0	
87	1	0-6 6-12	-- --	30.2 26.4	86 110	-- 0.85	-- 94						
88	1	0-6 6-12	-- --	36.2 34.8	67 76	-- 0.94	-- 71						
89	1	0-6 6-12	-- --	-- --	111+ 190+	-- --	-- --						
91	1	0-6 6-12	-- --	-- --	104 100	-- --	-- --						
92	1	0-6 6-12	-- --	-- --	-- --	-- --	-- --						
93	1	0-6 6-12	-- --	-- --	-- --	-- --	-- --						
Chanthaburi Area													
100	1	0-6 6-12	-- --	21.0 16.4	181 290+	-- --	-- --						
101	1	0-6 6-12	-- --	17.4 16.4	171+ 221+	-- --	-- --						
109	1	0-6 6-12	-- --	15.0 14.0	240+ 178+	-- --	-- --						

(Continued)

(4 of 8 sheets)

Table A5 (Continued)

Site No.	Section A. Site Data							Section B. Soil Data										
	Map Sheet	Grid Coor- di- nates	Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA			By Wt %	Atter- berg Limits			Organic Content %	Specific Gravity	
									Sand	Silt	Clay		Fines	LL	PL	PI		
113	5349II	128096	High	Lower slope	--	--	--	0-6	71	21	8	SL	35	19	19	0	SM	1.10 2.70
								6-12	69	21	10	SL	36	21	17	4	SM-SC	0.67 2.66
116	5448IV	770991	Low	Bottomland flat	--	--	Miscellaneous	0-6	49	35	16	L	59	60	41	19	MH	4.61 2.73
								6-12	48	38	14	L	60	52	33	19	MH	1.83 2.72
117	5448III	009778	Low	Bottomland flat	--	--	Cultivated	0-6	82	9	9	LS	21	38	22	16	SC	3.62 2.60
								6-12	77	16	7	SL	25	38	30	8	SM	2.87 2.59
118	5448III	002774	Low	Terrace flat	--	--	--	0-6	50	41	9	L	64	60	38	22	MH	-- 2.65
								6-12	46	48	6	SL	66	79	44	35	MH	-- 2.66
119	5448III	979767	Low	Bottomland flat	--	--	--	0-6	43	38	19	L	60	69	32	17	ML	3.07 2.60
								6-12	24	46	30	CL	78	57	25	32	CH	1.06 2.61
120	5448III	969788	Low	Tidal flat	--	--	Miscellaneous	0-6	83	14	3	LS	20	--	--	NP	SM	1.67 2.63
								6-12	92	8	0	S	10	--	--	NP	SP-SM	0.82 2.68
124	5448III	874790	Low	Bottomland flat	--	--	--	0-6	18	74	8	SIL	92	32	23	9	CL	2.41 2.60
								6-12	20	72	8	SIL	89	32	26	6	ML	4.38 2.57
126	5448III	897782	Low	Tidal flat	--	--	Miscellaneous	0-6	22	62	16	SIL	84	73	42	31	OH	8.98 2.55
								6-12	30	62	8	SIL	83	64	36	28	MH	6.27 2.58
127	5448III	895783	Low	Tidal flat	--	--	Cultivated	0-6	16	72	12	SIL	90	60	33	27	MH	5.79 2.55
								6-12	18	72	10	SIL	90	67	32	35	CH	6.20 2.61
128	5448III	895824	Low	Tidal flat	--	--	--	0-6	48	52	0	SIL	58	29	24	5	ML	0.92 2.68
								6-12	35	53	12	SIL	71	42	25	17	CL	-- 2.62
129	5448III	903820	Low	Tidal flat	--	--	--	0-6	71	25	4	SL	30	47	34	13	SM	3.41 2.62
								6-12	32	46	22	L	71	54	26	28	CH	0.54 2.65
131	5448IV	908835	Low	Terrace flat	--	--	--	0-6	64	33	3	SL	38	38	21	17	SC	1.55 2.58
								6-12	65	29	6	SL	38	40	19	21	SC	0.75 2.60
132	5448IV	882959	Low	Bottomland flat	--	--	Cultivated (idle)	0-6	55	34	11	SL	48	44	31	13	SM	2.15 2.65
								6-12	58	28	14	SL	44	43	30	13	SM	1.95 2.64
133	5448IV	866877	Low	Beach	--	--	Cultivated (idle)	0-6	84	14	2	LS	20	--	--	NP	SM	1.15 2.63
								6-12	81	17	2	LS	23	--	--	NP	SM	0.71 2.65
137	5448IV	900857	High	Terrace slope	--	--	--	0-6	56	31	13	SL	49	48	28	20	SM	2.67 2.55
								6-12	60	29	11	SL	46	49	28	21	SM	0.95 2.59
138	5448IV	902891	Low	Terrace flat	--	--	--	0-6	68	24	8	SL	34	50	30	20	SM	2.23 2.56
								6-12	71	23	6	SL	33	49	28	21	SM	2.47 2.56
139	5448IV	911931	Low	Bottomland flat	--	--	--	0-6	77	22	1	LS	25	33	21	12	SC	2.81 2.60
								6-12	80	17	3	LS	22	33	19	14	SC	3.00 2.60
140	5448IV	896943	Low	Bottomland flat	--	--	--	0-6	80	10	10	SL	21	39	25	14	SC	1.15 2.62
								6-12	83	9	8	LS	18	27	19	8	SC	0.70 2.62
141	5448IV	895962	Low	Bottomland flat	--	--	Miscellaneous	0-6	68	26	6	SL	40	21	20	1	SM	2.67 2.60
								6-12	61	31	8	SL	49	22	17	5	SM-SC	0.96 2.64
143	5448IV	804875	Low	Tidal flat	--	--	--	0-6	55	40	5	SL	56	60	38	22	OH	15.32 2.33
								6-12	41	50	9	SIL	68	80	46	34	OH	17.70 2.32
144	5448IV	811869	Low	Tidal flat	--	--	--	0-6	36	49	15	L	76	45	13	32	CL	7.25 2.49
								6-12	39	44	17	L	71	49	27	22	CL	5.02 2.50
145	5448IV	812917	Low	Tidal flat	--	--	--	0-6	50	40	10	L	65	21	21	0	ML	1.0 2.72
								6-12	37	48	15	L	75	26	17	9	CL	0.91 2.67
146	5448IV	757002	Low	Bottomland flat	--	--	Miscellaneous	0-6	54	38	8	SL	48	43	25	18	SC	2.23 2.60
								6-12	47	45	8	L	59	38	23	15	CL	2.03 2.51
147	5448IV	757993	Low	Bottomland flat	--	--	Cultivated (idle)	0-6	61	35	4	SL	46	23	20	3	SM	2.06 2.59
								6-12	57	36	7	SL	47	23	--	NP	SM	1.55 2.58
148	5448IV	752981	High	Upper slope	--	--	Miscellaneous	0-6	47	37	16	L	57	54	35	19	MH	3.48 2.65
								6-12	55	36	9	SL	50	46	35	11	ML	1.45 2.66
149	5448IV	773974	High	Terrace flat	--	--	--	0-6	41	49	10	L	70	58	47	11	MH	2.54 2.92
								6-12	56	30	14	SL	53	63	47	16	MH	1.20 2.93
150	5448IV	786958	Low	Bottomland flat	--	--	--	0-6	54	36	10	SL	55	55	41	14	MH	2.74 2.86
								6-12	52	36	12	L	56	56	43	13	MH	2.42 2.87
151	5448IV	790998	High	Upper slope	--	--	--	0-6	37	51	12	SIL	72	58	44	14	MH	3.14 2.70
								6-12	51	37	12	L	59	60	29	31	CH	1.93 2.74
152	5448IV	788991	High	Terrace flat	--	--</td												

Table A5 (Continued)

Site No.	No. of Visits	Section C. Trafficability Data												Depth to Water Table in.						
		Wet-Season Condition						High-Moisture Condition												
		Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	C _u psi	Tan φ _u	a _{ur}	Tan α _{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	C _u psi	Tan φ _u	a _{ur}	Tan α _{ur}
113	1	0-6	--	18.5	84	--	--													
		6-12	--	16.6	177	--	--													
116	1	0-6	--	49.8	118	--	--													
		6-12	--	44.5	135	1.01	134													
117	1	0-6	--	21.2	59	--	--													
		6-12	--	17.2	127	--	--													
118	1	0-6	--	31.0	119	--	--													
		6-12	--	40.0	128	0.64	82													
119	1	0-6	--	73.2	--	--	--													
		6-12	--	145.0	--	--	--													
120	1	0-6	--	16.4	145	--	--													
		6-12	--	10.2	108	--	--													
124	1	0-6	--	--	--	--	--													
		6-12	--	--	--	--	--													
126	1	0-6	--	100.2	19	--	--													
		6-12	--	77.7	37	0.52	19													
127	1	0-6	--	52.7	42	--	--													
		6-12	--	59.6	56	0.94	53													
128	1	0-6	--	--	--	--	--													
		6-12	--	--	--	--	--													
129	1	0-6	--	24.8	176	--	--													
		6-12	--	26.6	110	0.58	64													
131	1	0-6	--	19.6	124	--	--													
		6-12	--	24.4	142	0.59	84													
132	1	0-6	--	30.2	114	--	--													
		6-12	--	23.6	203+	0.96	195+													
133	1	0-6	--	12.7	121	--	--													
		6-12	--	13.4	116	--	--													
137	1	0-6	--	26.1	119	--	--													
		6-12	--	30.3	127	0.49	62													
138	1	0-6	--	28.6	66	--	--													
		6-12	--	16.7	82	--	--													
139	1	0-6	--	23.9	52	--	--													
		6-12	--	20.0	185+	0.45	83+													
140	1	0-6	--	14.5	190	--	--													
		6-12	--	12.6	152	--	--													
141	1	0-6	--	20.9	127	--	--													
		6-12	--	19.1	74	0.46	34													
143	1	0-6	--	63.0	56	--	--													
		6-12	--	99.8	29	0.49	14													
144	1	0-6	--	32.0	124	--	--													
		6-12	--	44.0	82	0.73	60													
145	1	0-6	--	23.3	100	--	--													
		6-12	--	45.6	50	0.64	32													
146	1	0-6	--	24.6	159+	--	--													
		6-12	--	22.6	290+	0.46	133+													
147	1	0-6	--	26.4	95	--	--													
		6-12	--	47.6	170+	0.60	102+													
148	1	0-6	--	33.8	147+	--	--													
		6-12	--	26.2	300+	0.97	291+													
149	1	0-6	--	45.5	231	--	--													
		6-12	--	41.6	216	1.29	279													
150	1	0-6	--	37.0	101	--	--													
		6-12	--	34.6	104	--	--													
151	1	0-6	--	44.9	192	--	--													
		6-12	--	42.8	213	--	--													
152	1	0-6	--	25.6	109	--	--													
		6-12	--	22.2	159	1.23	196													
154	1	0-6	--	54.4	56	--	--													
		6-12	--	52.8	94	1.52	143													
156	1	0-6	--	--	--	--	--													
		6-12	--	--	--	--	--													

(Continued)

(6 of 8 sheets)

Table A5 (Continued)

Site No.	Section A. Site Data										Section B. Soil Data									
	Grid Sheet	Coor- di-nates	Topog- raphy Class	Topo- graphic Position	Slope %	Vegetation	Land Use	Depth of Layer in.	USDA			By wt %	Atter- berg Limits			USCS			Organic Content %	Specific Gravity
									Sand	Silt	Clay		Type	Fines	LL	PL	PI	Type		
157	5448IV	791948	High	Lower slope	--	--	Miscellaneous	0-6 6-12	43 44	45 11	12	L L	67 66	57 61	44 46	13	MH MH	3.38 3.59	2.84 2.77	
158	5448IV	784968	High	Upland flat	--	--	Miscellaneous	0-6 6-12	35 52	52 38	13 10	SIL L	76 56	65 57	46 44	19 13	MH MH	3.88 2.68	2.73 2.81	
159	5448IV	807970	High	Terrace flat	--	--	--	0-6 6-12	54 46	31 35	15 19	SL L	51 58	21 36	20 20	1	ML CL	2.87 1.35	2.62 2.69	
160	5448IV	811969	High	Terrace flat	--	--	--	0-6 6-12	58 58	23 24	19 18	SL SL	46 46	34 37	21 21	13	SC SC	2.94 1.24	2.60 2.61	
162	5448IV	823969	High	Upper ridge	--	--	--	0-6 6-12	62 57	20 24	18 19	SL SL	44 49	22 22	19 18	3	SM SM-SC	2.03 0.96	2.59 2.59	
164	5448IV	853963	Low	Terrace flat	--	--	--	0-6 6-12	38 29	41 46	21 25	L L	63 66	40 54	26 29	14	ML CH	2.74 1.71	2.72 2.79	
165	5448IV	853963	Low	Bottomland flat	--	--	Miscellaneous	0-6 6-12	63 63	21 23	16 14	SL SL	40 40	32 34	20 20	12	CL CL	2.16 1.29	2.53 2.55	
168	5448IV	780997	High	Upland flat	--	--	--	0-6 6-12	44 53	46 39	10 8	L SL	66 60	56 61	43 44	13 17	MH MH	2.42 2.12	2.78 2.76	
171	5448IV	809007	High	Lower slope	--	--	Miscellaneous	0-6 6-12	71 66	17 24	12 10	SL SL	32 32	42 46	27 28	15 18	SM SM	3.07 1.77	2.53 2.52	
172	5448IV	826012	High	Lower slope	--	--	Miscellaneous	0-6 6-12	69 71	24 20	7 9	SL SL	35 31	34 43	19 24	15 19	SC SC	1.61 0.96	2.58 2.65	
174	5448IV	845988	High	Lower slope	--	--	Miscellaneous	0-6 6-12	42 51	41 37	17 12	L L	67 59	50 44	32 27	18 17	ML ML	4.71 2.29	2.56 2.62	
176	5448IV	805932	High	Upland flat	--	--	--	0-6 6-12	56 61	38 32	6 7	SL SL	53 48	55 55	41 41	14 14	MH SM	2.42 2.22	2.84 2.89	
177	5449III	977056	Low	Bottomland flat	--	--	Cultivated (idle)	0-6 6-12	32 41	53 42	15 17	SIL L	75 65	36 39	24 24	12 15	CL CL	2.16 1.45	2.58 2.61	
178	5449III	973048	Low	Bottomland flat	--	--	--	0-6 6-12	72 71	21 21	7 8	SL SL	39 39	-- 16	-- --	NP NP	SM SM	2.68 0.74	2.57 2.63	
179	5448IV	963967	High	Upper ridge	--	--	--	0-6 6-12	71 67	20 22	9 11	VGSL SL	15 40	39 55	20 23	19 32	GC SC	1.15 0.91	2.63 2.61	
180	5448IV	939969	Low	Bottomland flat	--	--	--	0-6 6-12	90 85	4 8	6 7	S LS	12 16	26 --	-- --	NP NP	SP-SM SM	1.05 0.91	2.65 2.65	
181	5448IV	930969	High	Upper ridge	--	--	--	0-6 6-12	48 39	31 44	21 17	GL BGL	41 28	40 51	23 33	17 18	SC CC	3.82 2.17	2.63 2.63	
182	5448IV	825930	High	Upland flat	--	--	--	0-6 6-12	57 58	35 32	8 10	GSL	41 36	35 45	26 26	9 19	SM SC	3.27 1.60	2.70 2.76	
183	5448IV	853934	Low	Natural levee	--	--	--	0-6 6-12	24 20	52 56	24 24	SIL SIL	82 86	43 47	28 28	15 19	ML ML	2.03 1.83	2.71 2.71	
184	5448IV	862943	Low	Bottomland flat	--	--	Cultivated (idle)	0-6 6-12	44 40	43 45	13 15	L L	58 58	60 58	29 43	31 15	CH MH	3.75 3.77	2.73 2.76	
185	5448IV	858957	Low	Bottomland flat	--	--	Cultivated (idle)	0-6 6-12	23 20	55 55	22 25	SIL SIL	83 86	65 61	44 41	21 20	MH MH	5.39 4.25	2.60 2.60	
186	5448IV	923973	Low	Bottomland flat	--	--	Miscellaneous	0-6 6-12	79 77	13 16	8 7	LS SL	22 26	26 26	-- 19	NP 7	SM SM-SC	2.75 2.35	2.58 2.58	
187	5448IV	815892	Low	Bottomland flat	--	--	Miscellaneous	0-6 6-12	40 42	53 46	7 12	SIL L	75 69	43 59	25 34	18 25	OL OH	8.55 12.67	2.49 2.44	
189	5448IV	832933	Low	Bottomland flat	--	--	Undisturbed	0-6 6-12	35 59	40 26	25 15	L SL	73 45	68 56	44 11	24 45	MH SC	7.75 7.82	2.56 2.45	
190	5349II	153084	Low	Bottomland flat	--	--	Miscellaneous	0-6 6-12	44 40	39 40	17 20	L GL	67 52	42 47	27 28	15 19	ML ML	4.40 1.45	2.62 2.82	
191	5349II	151067	Low	Bottomland flat	--	--	--	0-6 6-12	29 26	48 50	23 24	SIL	81 83	49 54	27 29	22 25	CL CH	0.87 1.00	2.76 2.73	
192	5349II	145044	High	Lower slope	--	--	--	0-6 6-12	65 63	25 28	10 9	SL SL	43 45	24 23	17 17	7 6	SM-SC SM-SC	1.20 0.96	2.61 2.62	
193	5349II	138038	High	Lower slope	--	--	--	0-6 6-12	75 78	23 20	2 2	LS LS	36 34	-- --	NP NP	SM SM	3.59 0.54	2.59 2.62		
194	5349II	124028	Low	Bottomland flat	--	--	--	0-6 6-12	56 57	37 36	7 7	SL GSL	55 41	34 28	22 17	12 11	CL SC	3.00 --	2.58 2.79	
195	5348I	137992	Low	Tidal flat	--	--	--	0-6 6-12	35 29	60 61	5 10	SIL SIL	64 75	24 27	20 18	4 9	CL-ML CL	1.50 0.86	2.77 2.76	
196	5348I	152982	High	Lower slope	--	--	--	0-6 6-12	83 85	17 15	0 0	LS LS	25 23	-- --	NP NP	SM SM	0.87 0.32	2.59 2.60		

(continued)

(7 of 8 sheets)

Table A5 (Concluded)

Site No.	No. of Visits	Section C. Traficability Data												Depth to Water Table** in.				
		Wet-Season Condition						High-Moisture Condition										
		Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	Sheargraph c_u psi	Tan ϕ_u	Tan α_{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	Sheargraph c_u psi	Tan ϕ_u	Tan α_{ur}
157	1	0-6	--	60.4	116	--	--											
		6-12	--	46.4	150	0.82	123											
158	1	0-6	--	53.0	130	--	--											
		6-12	--	48.5	130	0.46	60											
159	1	0-6	--	26.6	132+	--	--											
		6-12	--	19.0	229+	0.59	135+											
160	1	0-6	--	28.3	92	--	--											
		6-12	--	24.6	133	1.14	152											
162	1	0-6	--	--	--	--	--											
		6-12	--	--	--	--	--											
164	1	0-6	--	--	--	--	--											
		6-12	--	--	--	--	--											
165	1	0-6	--	19.1	154	--	--											
		6-12	--	17.4	187	0.64	120											
168	1	0-6	--	40.0	298+	--	--											
		6-12	--	44.2	300+	--	--											
171	1	0-6	--	29.6	130	--	--											
		6-12	--	20.2	151	--	--											
172	1	0-6	--	19.6	107	--	--											
		6-12	--	19.6	235+	0.78	103+											
174	1	0-6	--	38.2	117	--	--											
		6-12	--	30.8	120	1.19	143											
176	1	0-6	--	44.6	79	--	--											
		6-12	--	44.5	108	1.15	134											
177	1	0-6	--	32.6	188	--	--											
		6-12	--	26.0	173	0.79	137											
178	1	0-6	--	29.3	125	--	--											
		6-12	--	20.0	141	0.11	16											
179	1	0-6	--	--	--	--	--											
		6-12	--	--	--	--	--											
180	1	0-6	--	--	--	--	--											
		6-12	--	--	--	--	--											
181	1	0-6	--	--	--	--	--											
		6-12	--	--	--	--	--											
182	1	0-6	--	22.9	176+	--	--											
		6-12	--	16.2	241+	--	--											
183	1	0-6	--	28.4	112	--	--											
		6-12	--	20.4	219+	--	--											
184	1	0-6	--	52.0	86	--	--											
		6-12	--	49.0	109	0.53	58											
185	1	0-6	--	57.2	64	--	--											
		6-12	--	48.6	94	0.76	71											
186	1	0-6	--	18.6	107	--	--											
		6-12	--	15.8	217	--	--											
187	1	0-6	--	40.2	33	--	--											
		6-12	--	91.2	18	--	--											
189	1	0-6	--	110.0	17	--	--											
		6-12	--	66.0	54	--	--											
190	1	0-6	--	32.7	115	--	--											
		6-12	--	17.5	245+	--	--											
191	1	0-6	--	28.7	144	--	--											
		6-12	--	22.6	157+	1.05	165+											
192	1	0-6	--	--	--	--	--											
		6-12	--	--	--	--	--											
193	1	0-6	--	--	--	--	--											
		6-12	--	--	--	--	--											
194	1	0-6	--	22.0	170	--	--											
		6-12	--	18.6	202+	1.12	226+											
195	1	0-6	--	18.2	205+	--	--											
		6-12	--	17.8	280+	0.75	210											
196	1	0-6	--	--	--	--	--											
		6-12	--	--	--	--	--											

(8 of 8 sheets)

Table A6
Terrain-Vehicle Tests
Summary of Site, Soil, and Trafficability Data

Site No.	Map Sheet	Section A. Site Data							Depth of Layer in.	Section B. Soil Data			Organic Content %	Specific Gravity					
		Grid Coor- di-nates	Topo- graphy Class	Topo- graphic Position	Slope %	Vegetation	Land Use	USCS			Amer- berg Limits LL PL PI	Type*							
								Sand	Silt	Clay									
Khon Kaen Area																			
HG-1	5560II	661097	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6 6-12	22 22	49 49	29 29	CL CL	87 87	38 38	20 20	18 .4	CL CL	--	2.71
HG-2	5560II	661096	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6 6-12	41 41	31 31	28 28	CL CL	67 67	31 31	17 17	14 14	CL CL	--	2.68
HG-3	5560II	662097	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6 6-12	13 13	45 45	42 42	SIC SIC	90 90	77 77	38 38	39 39	MH MH	--	2.72
HG-4	5560II	662097	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6 6-12	13 13	38 38	49 49	C C	90 90	69 69	37 37	32 32	MH MH	--	2.72
HG-5	5560II	663097	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6 6-12	31 31	27 27	42 42	C C	73 73	71 71	35 35	36 36	MH MH	--	2.77
HG-6	5560II	661096	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6 6-12	14 14	51 51	35 35	SICL SICL	93 93	38 38	21 21	17 17	CL CL	--	2.65
HG-7	5560II	661097	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6 6-12	39 39	46 46	15 15	L L	66 66	24 24	18 18	6 6	CL-ML CL-ML	--	2.72
HG-8	5560II	661097	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6 6-12	14 14	62 62	24 24	SIL SIL	93 93	21 21	-- --	NP NP	ML ML	--	2.63
HG-9	5560II	662097	Low	Bottomland flat	0	Short-grass prairie	Undisturbed	0-6 6-12	19 19	51 51	30 30	SICL SICL	90 90	40 40	23 23	17 17	CL CL	--	2.64
SG-1	5560II	688147	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	47 39	42 45	11 16	L L	63 69	15 19	-- 14	5 5	NP CL-ML	--	2.60
SG-2	5560II	687144	Low	Bottomland flat	0	Short-grass prairie	Cultivated (idle)	0-6 6-12	45 46	43 38	12 16	L L	64 63	21 25	15 16	6 9	CL-ML CL	--	2.61
SG-3	5560I	691265	Low	Terrace slope	3	Short-grass prairie	Cultivated (idle)	0-6 6-12	46 50	41 36	13 14	L L	69 67	20 28	-- 17	NP 11	ML CL	--	2.63
CC-2A	5560I	645400	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	46 63	35 30	19 7	SL SL	70 61	20 21	-- 16	5 5	NP CL-ML	--	2.63
CC-2B	5560I	646401	Low	Terrace flat	0	Woodland	Undisturbed	0-6 6-12	59 57	35 30	6 13	SL SL	57 58	-- 20	NP 17	3	ML ML	--	--
CC-2C	5560I	643399	Low	Terrace flat	0	Woodland	Undisturbed	0-6 6-12	68 61	27 25	5 14	SL SL	45 51	-- 20	NP 16	SM CL-ML	--	--	
CC-4A	5561II	655468	Low	Terrace slope	2	Woodland	Undisturbed	0-6 6-12	80 79	14 14	6 7	CSL VGSL	18 13	-- --	NP NP	SM SM	--	--	
CC-4B	5561II	655472	Low	Terrace slope	2	Woodland	Undisturbed	0-6 6-12	82 79	13 16	5 5	LS LS	26 29	-- --	NP NP	SM SM	--	--	
CC-5A	5561II	662472	High	Upper slope	5	Barren	Undisturbed	0-6 6-12	41 47	20 16	39 37	CL SC	63 61	55 60	19 19	36 41	CH CH	--	--
CC-5B	5561II	661472	Low	Lower slope	5	Tall-grass prairie	Undisturbed	0-6 6-12	72 58	14 11	14 31	SL SCL	43 57	24 36	17 15	7 21	SM-SC CL	--	--
CC-5C	5561II	658472	Low	Bottomland flat	0	Short-grass prairie	Cultivated (rice)	0-6 6-12	54 53	34 30	12 17	SL SL	59 61	19 21	15 15	4 6	CL-ML CL-ML	--	--
CC-5D	5561II	657472	Low	Terrace slope	3	Woodland	Undisturbed	0-6 6-12	79 73	14 11	7 16	LS SL	30 37	-- 22	NP 12	SM SC	--	--	
CC-5E	5561II	653472	Low	Terrace slope	3	Woodland	Undisturbed	0-6 6-12	81 81	17 16	2 3	LS LS	27 27	-- --	NP NP	SM SM	--	--	
M-1	5560I	684320	High	Upland flat	0	Woodland	Undisturbed	0-6 6-12	78 75	18 18	4 7	LS SL	34 36	13 --	NP NP	SM SM	--	--	

(Continued)

* G = gravelly; VG = very gravelly.

Table A6 (Concluded)

Site No.	No. of Visits	Section C. Trafficability Data												Depth to Water Table† in.								
		Wet-Season Condition						High-Moisture Condition														
		Depth of Layer in.	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c _u psi	Tan θ _u	a _{ur} psi	Tan θ _{ur}	Dry Density lb/cu ft	MC, %	CI	RI	RCI	c _u psi	Tan θ _u	a _{ur} psi	Tan θ _{ur}		
Khop Kaen Area																						
HG-1	1	0-6	--	28.3	135	0.72	97	3.0	0.23	--	--	--	28.3	135	0.72	97	3.0	0.23	--	--	0	
		6-12	--	28.5	313+	0.58	182+						28.5	313+	0.58	182+						
HG-2	1	0-6	--	26.6	71	0.68	48	2.9	0.40	--	--	--	26.6	71	0.68	48	2.9	0.40	--	--	0	
		6-12	--	26.5	165	0.67	111						26.5	165	0.67	111						
HG-3	1	0-6	--	29.2	86	0.48	41	0.2	0.18	--	--	--	29.2	86	0.48	41	0.2	0.18	--	--	+1	
		6-12	--	31.6	175	0.43	75						31.6	175	0.43	75						
HG-4	1	0-6	--	26.6	139	0.70	97	1.5	0.22	--	--	--	26.6	139	0.70	97	1.5	0.22	--	--	0	
		6-12	--	30.1	246	0.58	143						30.1	246	0.58	143						
HG-5	1	0-6	92.3	27.5	142	0.80	114	1.7	0.40	--	--	--	92.3	27.5	142	0.80	114	1.7	0.40	--	--	0
		6-12	--	31.0	180	0.74	133						31.0	180	0.74	133						
HG-6	1	0-6	99.3	24.0	44	0.70	31	0.0	0.16	--	--	--	99.3	24.0	44	0.70	31	0.0	0.16	--	--	0
		6-12	98.4	25.5	115	0.66	76						98.4	25.5	115	0.66	76					
HG-7	1	0-6	104.1	21.7	73	0.62	45	1.2	0.18	--	--	--	104.1	21.7	73	0.62	45	1.2	0.18	--	--	0
		6-12	--	19.9	207	0.45	93						--	19.9	207	0.45	93					
HG-8	1	0-6	100.5	21.5	111	0.61	68	0.0	0.34	--	--	--	100.5	21.5	111	0.61	68	0.0	0.34	--	--	0
		6-12	--	22.4	299	0.77	230						--	22.4	299	0.77	230					
HG-9	1	0-6	97.2	23.4	45	0.60	27	0.0	0.18	--	--	--	97.2	23.4	45	0.60	27	0.0	0.18	--	--	0
		6-12	--	28.0	138	0.61	84						--	28.0	138	0.61	84					
SG-1	3	0-6	102.0	17.3	96	0.43	36	1.3	0.37	0.3	0.40	--	106.9	17.0	72	0.33	24	0.0	0.27	0.0	0.27	+2
		6-12	109.6	16.6	182	0.46	74						107.0	18.4	161	0.38	61					
SG-2	1	0-6	103.6	17.1	85	0.51	43	2.2	0.55	0.0	0.47	--	103.6	17.1	85	0.51	43	2.2	0.55	0.0	0.47	+2
		6-12	--	--	174	--	--						--	174	--	--						
SG-3	2	0-6	102.6	20.7	111	0.68	76	2.0	0.33	0.6	0.30	--	103.4	20.4	104	0.56	58	1.2	0.30	0.3	0.27	+3
		6-12	95.1	25.2	139	0.72	98						--	24.1	142	0.62	88					
CC-2A	2	0-6	99.6	21.3	79	0.47	36	0.5	0.32	0.0	0.34	--	108.0	18.2	72	0.63	45	0.5	0.32	0.0	0.34	+6
		6-12	107.8	17.9	133	0.33	46						106.4	18.7	86	0.26	22					
CC-2B	1	0-6	110.7	14.0	225	--	--	2.7	0.36	1.0	0.32											
		6-12	104.1	13.3	237	--	--															
CC-2C	1	0-6	101.6	11.1	214	--	--	1.6	0.55	0.0	0.51											
		6-12	107.6	13.0	239	--	--															
CC-4A	1	0-6	--	--	399+	--	--	0.2	0.38	0.2	0.42											
		6-12	--	--	699+	--	--															
CC-4B	1	0-6	--	9.5	169	--	--	2.3	0.36	1.5	0.25											
		6-12	--	--	130	--	--															
CC-5A	1	0-6	--	20.4	616+	--	--	--	--	0.0	0.36											
		6-12	--	20.1	750+	--	--															
CC-5B	1	0-6	98.2	10.5	365	--	--	2.0	0.47	0.0	0.47											
		6-12	105.3	17.1	296	--	--															
CC-5C	1	0-6	109.2	17.2	98	0.32	31	2.8	0.34	1.2	0.23	--	109.2	17.2	98	0.32	31	2.8	0.34	1.2	0.23	+3
		6-12	99.1	20.9	136	0.43	58						99.1	20.9	136	0.43	58					
CC-5D	1	0-6	--	12.2	145	--	--	2.0	0.45	0.6	0.38											
		6-12	--	14.9	188	--	--															
CC-5E	1	0-6	94.8	23.2	33	0.36	12	2.4	0.40	0.6	0.38	--	94.8	23.2	33	0.36	12	2.4	0.40	0.6	0.38	0
		6-12	100.5	19.3	46	0.75	35						100.5	19.3	46	0.75	35					
M-1	2	0-6	102.0	12.5	154	--	--	2.0	0.42	0.6	0.40											
		6-12	99.8	12.7	129	--	--															

** c_u, ultimate soil-to-soil cohesion; θ_u, ultimate soil-to-soil angle of internal friction; a_{ur}, ultimate soil-to-rubber adhesion; α_{ur}, ultimate soil-to-rubber angle of friction.

DISTRIBUTION LIST FOR ARPA REPORTS

Address	<u>No. of Copies</u>
Secretary of Defense, ATTN: ARPA/AGILE, The Pentagon, Washington, D. C.	4
Commanding General, U. S. Army Materiel Command, ATTN: AMCRD-RV-E, Washington, D. C.	2
Dr. Daniel C. Drucker, Physical Sciences Council, Brown University, Providence, R. I.	1
Dr. Emil H. Jebe, Operations Research Dept., Institute of Science and Technology, University of Michigan, Box 618, Ann Arbor, Mich.	1
Commanding General, U. S. Army Tank-Automotive Center, ATTN: SMOTA-RCL (Mr. R. A. Liston), Warren, Mich.	3
Dr. Ralph E. Fadum, Dean, School of Engineering, North Carolina State College of the University of North Carolina, Raleigh, N. C.	1
Prof. Robert Horonjeff, 3643 Brook St., Lafayette, Calif.	1
Director, Joint Research and Test Activity, APO San Francisco 96243	1
Director, OSD/ARPA R&D Field Unit, APO San Francisco 96243	2
Director, OSD/ARPA R&D Field Unit, APO San Francisco 96346	25
Commander, U. S. Military Assistance Command, APO San Francisco 96346	2
Dr. Clark N. Crain, Director, Project DUTY, Dept. of Geography, University of Denver, Denver, Colo.	2
CINCPAC, Camp H. M. Smith, Oahu, Hawaii	2
Mr. A. C. Orvedal, Chief, World Soil Geography Unit, Soil Conservation Service, USDA, Hyattsville, Md.	2
Commanding General, U. S. Army Natick Laboratories, ATTN: AMXRE-ED (Dr. L. W. Trueblood), Natick, Mass.	2
Chief, Source Material Unit, Branch of Military Geology, U. S. Geological Survey, Washington, D. C.	2

Unclassified

Security Classification

DOCUMENT CONTROL DATA - R&D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author) U. S. Army Engineer Waterways Experiment Station Vicksburg, Mississippi	2a. REPORT SECURITY CLASSIFICATION Unclassified 2b. GROUP
--	---

3. REPORT TITLE TRAFFICABILITY CLASSIFICATION OF THAILAND SOILS
--

4. DESCRIPTIVE NOTES (Type of report and inclusive dates) Final report

5. AUTHOR(S) (Last name, first name, initial) Meyer, M. P.

6. REPORT DATE January 1967	7a. TOTAL NO. OF PAGES 137	7b. NO. OF REFS 15
--------------------------------	-------------------------------	-----------------------

8a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER(S)
---------------------------	-----------------------------------

b. PROJECT NO. 1-V-0-21701-A-046	Technical Report No. 3-753
----------------------------------	----------------------------

c. Task No. 1-V-0-21701-A-046-02	9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)
----------------------------------	---

d.

10. AVAILABILITY/LIMITATION NOTICES This document is subject to special export controls and each transmittal to foreign governments or foreign nationals may be made only with prior approval of U. S. Army Engineer Waterways Experiment Station.

11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY U. S. Army Materiel Command
-------------------------	---

13. ABSTRACT

Pertinent soil trafficability data were collected during the wet season at 846 sites in Thailand. The soils were identified according to the Unified Soil Classification System and the U. S. Department of Agriculture textural classification system. Two general topographic positions (high topography and low topography) and two general levels of wetness were considered. A scheme for classifying soils according to their trafficability was developed. The scheme lists the soil types in order of decreasing trafficability under each of three topography-wetness level categories and shows the probability of successful passage on each soil for vehicles of known soil strength requirements. The scheme permits the estimation of the probability of a successful operation for given soil type, topography, and wetness-level conditions. If a choice of several routes and vehicles is available, the determination of the vehicles with the best chances of success over a given route or of the best route for given vehicles can be made.

DD FORM 1 JAN 64 1473

Unclassified
Security Classification

Unclassified

Security Classification

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Soils -- Thailand Soils -- Trafficability Thailand						
INSTRUCTIONS						
1. ORIGINATING ACTIVITY: Enter the name and address of the contractor, subcontractor, grantee, Department of Defense activity or other organization (corporate author) issuing the report.	10. AVAILABILITY/LIMITATION NOTICES: Enter any limitations on further dissemination of the report, other than those imposed by security classification, using standard statements such as:					
2a. REPORT SECURITY CLASSIFICATION: Enter the overall security classification of the report. Indicate whether "Restricted Data" is included. Marking is to be in accordance with appropriate security regulations.	(1) "Qualified requesters may obtain copies of this report from DDC."					
2b. GROUP: Automatic downgrading is specified in DoD Directive 5200.10 and Armed Forces Industrial Manual. Enter the group number. Also, when applicable, show that optional markings have been used for Group 3 and Group 4 as authorized.	(2) "Foreign announcement and dissemination of this report by DDC is not authorized."					
3. REPORT TITLE: Enter the complete report title in all capital letters. Titles in all cases should be unclassified. If a meaningful title cannot be selected without classification, show title classification in all capitals in parenthesis immediately following the title.	(3) "U. S. Government agencies may obtain copies of this report directly from DDC. Other qualified DDC users shall request through ."					
4. DESCRIPTIVE NOTES: If appropriate, enter the type of report, e.g., interim, progress, summary, annual, or final. Give the inclusive dates when a specific reporting period is covered.	(4) "U. S. military agencies may obtain copies of this report directly from DDC. Other qualified users shall request through ."					
5. AUTHOR(S): Enter the name(s) of author(s) as shown on or in the report. Enter last name, first name, middle initial. If military, show rank and branch of service. The name of the principal author is an absolute minimum requirement.	(5) "All distribution of this report is controlled. Qualified DDC users shall request through ."					
6. REPORT DATE: Enter the date of the report as day, month, year, or month, year. If more than one date appears on the report, use date of publication.	If the report has been furnished to the Office of Technical Services, Department of Commerce, for sale to the public, indicate this fact and enter the price, if known.					
7a. TOTAL NUMBER OF PAGES: The total page count should follow normal pagination procedures, i.e., enter the number of pages containing information.	11. SUPPLEMENTARY NOTES: Use for additional explanatory notes.					
7b. NUMBER OF REFERENCES: Enter the total number of references cited in the report.	12. SPONSORING MILITARY ACTIVITY: Enter the name of the departmental project office or laboratory sponsoring (paying for) the research and development. Include address.					
8a. CONTRACT OR GRANT NUMBER: If appropriate, enter the applicable number of the contract or grant under which the report was written.	13. ABSTRACT: Enter an abstract giving a brief and factual summary of the document indicative of the report, even though it may also appear elsewhere in the body of the technical report. If additional space is required, a continuation sheet shall be attached.					
8b, 8c, & 8d. PROJECT NUMBER: Enter the appropriate military department identification, such as project number, subproject number, system numbers, task number, etc.	It is highly desirable that the abstract of classified reports be unclassified. Each paragraph of the abstract shall end with an indication of the military security classification of the information in the paragraph, represented as (TS), (S), (C), or (U).					
9a. ORIGINATOR'S REPORT NUMBER(S): Enter the official report number by which the document will be identified and controlled by the originating activity. This number must be unique to this report.	There is no limitation on the length of the abstract. However, the suggested length is from 150 to 225 words.					
9b. OTHER REPORT NUMBER(S): If the report has been assigned any other report numbers (either by the originator or by the sponsor), also enter this number(s).	14. KEY WORDS: Key words are technically meaningful terms or short phrases that characterize a report and may be used as index entries for cataloging the report. Key words must be selected so that no security classification is required. Identifiers, such as equipment model designation, trade name, military project code name, geographic location, may be used as key words but will be followed by an indication of technical context. The assignment of links, rules, and weights is optional.					

Unclassified

Security Classification